INTERNATIONAL ABSTRACT OF SURGERY

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ABSTRACTS OF CURRENT LITERATURE

GENERAL SURGERY—SURGICAL TECHNIQUE

Ochsner, A. J.: Postoperative Treatment of Surgical Cases. *Illinois M. J.*, 1918, xxxii, 20.

After the author emphasizes the importance of certain pre-operative measures, the following rules for postoperative treatment are mentioned and discussed:

Hot water by mouth and proctoclysis is given directly after the operation.

Gastric lavage is indicated for abdominal distention, nausea or vomiting.

An ice coil over the cardiac region is used for high fever and for a rapid pulse; for the latter also give a normal saline transfusion.

Bronchial irritation is alleviated by elevation of the head of the bed 12 to 18 inches and by proctoclysis and normal saline transfusion. This is also effective for peritonitis or pain; the therapeutic lamp should also be suspended over the abdomen.

Transfusion of whole blood is indicated for extreme shock.

With the exception of peritonitis and all operations on the gastro-intestinal tract, a soap suds or normal salt enema should be given and castor oil on the tenth day. Broth, beef tea or gruel should be given on the third day.

The patient should never be moved to the dressing room unless in good physical condition.

Patients should never be left lying on a cart in the hall waiting for operation or dressing.

When hæmostats are left in the wound, they should be loosened on the second evening and removed the following morning. Superficial sutures should be removed on the sixth day, deep ones on the twelfth to the fifteenth day.

Gastrectomy, prostatectomy and mammectomy drains should be removed from the second to the fourth day; gall-bladder tampons on the fifth day; cholecystectomy and appendectomy tampons on the seventh to the tenth day; vaginal tampons in clean cases on the fifth day; endometritis cases on the second day.

No drugs should be given except after consultation.

H. H. FREILICH.

Jones, H. W.: After-Care in Abdominal Operations. *N. Y. St. J. Med.*, 1917, xvii, 458.

If the patient recovers quickly from the anæsthetic and vomits or shows signs of restlessness, one-sixth of a grain of morphine sulphate is given hypodermically. If the patient sleeps out of the ether, this will not be necessary until later. Rectal saline, one pint, is administered slowly before the patient recovers from the anæsthetic, or immediately after. Water, either hot or cold, as best tolerated, is given as soon as the patient asks for it.

If vomiting persists after twelve hours, one dram of sodium bicarbonate in six ounces of lukewarm water is given. This washes out the stomach and usually results in cessation of vomiting. Only rarely does it become necessary to resort to the stomach tube. When the soda solution is retained, it is useful in overcoming acidosis. In any case, bicarbonate of sodium in doses of twenty grains every three hours is helpful for the first two or three days. It not only overcomes the acidosis, but appears to have a favorable influence on the gas pain.

In nearly every case the author orders morphine sulphate, one-sixth to one-fourth of a grain hypodermically every four hours, if occasion requires, for the first two days. In over 200 cases it has never been necessary to use more than one and one-half grains for any one case.

A cathartic need not be administered until the third day. If the patient is made very uncomfortable by gas distention, soap suds enema may be given. If this fails, a high enema, containing one ounce of magnesium sulphate, one ounce of glycerin, and four ounces of water may be used. Occasionally

turpentine is added. Cathartics are not given by mouth until the third or even the fourth day. Morphine and antacids can be depended upon to relieve the gas pain.

To insure a rapid convalescence, sleep is essential during the stay in the hospital. If the usual sponge baths and hot drinks at bedtime do not accomplish this purpose, bromides and hyoscyamus or some of the coal tar sedatives should be used. The conservation of nervous energy determines a favorable outcome in many cases. EDWARD L. CORNELL.

ASEPTIC AND ANTISEPTIC SURGERY

Canestro, C.: Treatment of Large Septic Wounds by Means of Irrigation with Capillary Drainage (Cura delle grandi ferite settiche mediante irrigazione con drenaggio capillare). *Policlin*, Roma, 1917, xxiv, *sez. prat.*, 1257.

In treating septic wounds, Canestro has modified the Carrel method by substituting strands or ropes of cotton instead of rubber tubes. These cotton strands run from a reservoir filled with antiseptic placed above the patient, then traverse the furrows of the wound and emerge and drain into a lower receptive vessel. If the cords are not long enough to traverse the wound, then a double set may be used, one set from the antiseptic to the wound having an afferent function and the other set having an efferent function from the wound to the drainage receptacle.

The author's method is based on his observations that if two vessels be taken, both containing hypochlorite solution with a difference of level between them of about a meter and then connected with filiform strands, the fluid will pass from the upper to the lower vessel with a velocity equal to about 140 ccm. per hour, the velocity increasing or diminishing according as the distance between the vessels is increased or diminished. Also, if in one vessel a hypochlorite solution is placed, in a second vessel some organic fluid such as purulent hæmatic serum and in a third water, and if the three vessels are put in communication by the cotton strands, it will be seen that the hypochlorite solution passes into the second receptacle, and from thence mixed with the purulent fluid it passes into the third.

The author shows how the method may be applied in different classes of wounds and gives 10 illustrative cases treated by him, in 9 of which the infective process was overcome. He claims that the cotton strands provide a more efficacious drainage than rubber tubes and are less costly. W. A. BRENNAN.

Haycraft, J. B.: The Treatment of Gunshot Wounds with a Solution of Soap and Water and Primary Suture. *Brit. M. J.*, 1918, i, 80.

The solution used is pure sapo durus, 1 part, obtained in blocks and cut into shavings which are dissolved in hot water, 20 parts, previously boiled. When used, it is mixed with an equal volume of sterile water.

Superficial wounds are completely excised and soap solution well rubbed into the surface and the wound stitched up. In single penetrating wounds the skin wound is completely excised and the track of the missile laid open and the surface of the track cut away. Foreign bodies are removed, vessels ligated and the wound swabbed out with soap solution. Muscles and fasciæ are closed with catgut and the skin sutured. Seton wounds are treated the same way, at the entrance and exit wounds. If there is much destruction of muscle tissue the skin is sutured over the wound and a small rubber split tube put in for one or two days. Amputations have been completely stitched up with a very small split tube in one angle for twenty-four hours. Penetrating wounds of the knee-joint have been completely excised down to the synovial membrane, the joint irrigated with soap solution and the wound closed in layers.

The effect of the soap solution seems to be hæmostatic. The total number of cases is 116. Out of 98 cases in which the result was observed, 91 eventually healed and 7 failed altogether. Out of 38 compound fracture cases, 33 eventually healed and 2 failed. In some cases there was a little oozing or superficial suppuration necessitating the removal of one or two stitches. Four charts are appended and two tables are given.

The conclusions are as follows:

1. Soap solution easily permeates and comes into contact with the whole surface of the wound. It acts as a mechanical cleansing agent, washing away all débris.

2. Complete excision of a wound leaving an aseptic surface is possible only in superficial wounds and in superficial muscular wounds. It is impracticable in deep penetrating wounds, compound fractures, etc., on anatomical grounds, and it would also entail a much freer removal of tissue, which may impair future functional results. These latter cases when treated by soap solution and primary suture heal better than if an antiseptic such as eusol or bipp had been used. It follows from this that the tissues themselves are able to deal successfully with any infection which is left behind without the aid of an antiseptic. This point is particularly exemplified by those cases in which there is at first an intense local reaction following the operation; it subsides as the tissues gain the upper hand.

3. Success depends on getting cases within a few hours after the wound was received, before infection progresses far into the adjacent muscle, on the thorough removal of dead or grossly damaged tissues, and the localization by X-rays and removal of any foreign body that may be present.

4. Compound fractures of the upper extremity practically always do well; only 3 cases of fracture of the femur have been thus treated, and of these 2 were successful, but the number is too small to warrant a definite opinion. It is necessarily the most severe type of case one has to deal with, but

the results of those cases have been distinctly encouraging.

5. The advantages of primary suture are obvious: (a) easy, rapid, and painless dressings; (b) time is saved for everyone once the patient has left the operating theatre; (c) it is economical. The time taken in the operating theater is, however, considerably longer, and this generally forbids the use of the method when the pressure of work is high.

6. One of the most important points is that no severe injury which has been stitched up should be evacuated for at least a week, first, because it may just turn the balance during the early days of local reaction when the tissues are getting the upper hand and cause failure; and, secondly, because when it is very difficult to decide whether the case should be opened up or not, the operator himself is in a much better position to judge what is likely to be taking place inside the wound he has sewn up than someone else who gets the case later; consequently stitches remain in which might otherwise be taken out.

7. No opinion can be given as to the ultimate functional result, as to bony union and the action of muscles.

In those cases in which primary suture has been out of the question owing to gross loss of tissue, after the usual operative procedure soap pack has been used after the manner of the salt pack. It has been left in as a rule for five to seven days, and when taken out left a beautifully healthy wound.

CARL R. STEINKE.

Gurd, F. B.: Potassium Permanganate in the Treatment of Anaerobic Infection of Wounds. *J. Roy. Army M. Corps*, Lond., 1917, xxix, 202.

The author thinks that unless adequate operative and mechanical treatment of wounds infected with the bacillus aerogenes capsulatus is carried out, no antiseptic employed as a dressing will be of value. Prevention and control of infection by this bacterium is extremely important for surgeons working in casualty clearing stations.

In the author's hands potassium permanganate solutions in dilutions of from three to one-half per cent have proved more effective in the prophylaxis and treatment of wound infections by the gas-producing group of anaerobes than other preparations. It should be used whenever an infection has commenced, and in all extensively lacerated wounds, especially if accompanied by bone comminution or injury to important vessels.

The author gives his reasons for the selection of potassium permanganate: (1) it is cheap; (2) it is a powerful oxidizing agent; (3) it is an effective germicide; (4) it is astringent; (5) it does not macerate epithelium, etc.; (6) it is a mild irritant and stimulates blood circulation; (7) it causes little pain; (8) it induces the prompt appearance of healthy granulation; (9) it does not stain the tissues.

The results in a large group of cases have been uniformly good.

W. A BRENNAN.

Emerson, M. L.: Bismuth Iodoform Petrolatum Paste in the Treatment of Recent Wounds. *J. Am. M. Ass.*, 1918, lxx, 79.

The author describes this paste chemically, states the technique of application, and cites cases illustrative of results obtained from its use.

The paste consists of iodoform 2 parts; bismuth subnitrate 1 part; and liquid petrolatum sufficient to make a suspension. To this mixture may be added three grains of thymol, rendering it odorless, but not changing it chemically. Thymol, one-half dram, may be added to a five-yard package of iodoform gauze, to render it odorless. Hands, instruments or containers washed in turpentine or mustard water will lose the odor of iodoform.

This mixture has been used in fresh war injuries and the author strongly advocates it after using it in a long series of hospital cases.

The paste is rubbed thoroughly into the wound with a piece of gauze until it is intimately embodied in the wound, surface and edges, and the entire raw surface is studded with crystals. Surplus paste is then wiped away, and the wound edges coapted firmly until hæmorrhage ceases. In scalp wounds an occasional vessel will have to be crushed or twisted, and better success is reported if hæmorrhage is controlled in this way. No catgut should be used. In this class of cases the results have been particularly satisfactory, practically no complicating infection occurring since its use.

In face wounds, approximation is attained by horse hair suture. Coaptation is also effected in some cases by the use of narrow adhesive strips. Dressings are avoided in face and head cases because of the conspicuousness of the bandage and increased likelihood of superficial infection.

Strands of silkworm gut are usually placed in contused or lacerated wounds, to establish drainage. In larger wounds with macerated soft parts and much dirt included, it is recommended that the edges be trimmed and the fresh, raw surfaces thus formed be coapted by suture and drained for a few days.

An interesting report of cases is included, indicating satisfactory results from its use, and pointing to the economy of its use and its painlessness.

V. E. DUDMAN.

Potherat, G.: Primary and Secondary Union of War Wounds (Réunions primitives et réunions secondaires des plaies de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2225.

In 221 primary sutures of wounds Potherat had 2 failures and 11 partial failures. When for instance the wound was more than twelve hours old or was a long sinuous seton, and he could not obtain primary union, he did secondary suture. After the usual surgical disinfection, he submitted the wound to continuous or intermittent irrigation with chloride of magnesium, 12.5 per 1,000, to which is added 0.125 gr. of ammonium chloride.

Potherat has used the Carrel-Dakin solution, but

has not found the method satisfactory. Wounds are not cleansed as rapidly as claimed, and often there are peripheral burns observed on his own as well as on the patients of others. He prefers therefore to use magnesium chloride which is rapid in its action and is not harmful to the tissues; it is also easily prepared.

In from eight to ten days an arrest of suppuration is obtained and within a few days secondary suture can be undertaken. The results of 459 secondary sutures gave only 20 failures. W. A. BRENNAN.

Le Grand: Color Fixation of Tissues and Primary Suture (Fixateur colorant et sutures primitives). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2160.

Some time ago Le Grand reported his initial work in the coloration of contused wound tissue by a solution of methylene blue in formol as a guide for resection to be followed by primary suture. The present report gives further experimental and statistical results.

He has altered his solution. Instead of using a 40 per cent commercial solution of formol, he uses now a 20 per cent solution. The quantity of blue has also been reduced from 10 per cent to 5 per cent. With the revised method the effects previously observed on the blood-vessels or nerves, although lessened, still exist to some extent.

Success in wound treatment necessitates the removal of all tissue destined to necrosis. No antiseptic treatment will permit the primary suture of a wound, but resection of the contused tissues permits it. The color fixation of contused tissues has for its object the careful and exact resection of all contused tissue, and experimental research has shown it capable of effecting this. The technique of injecting the tissues is given.

The present statistics of Le Grand comprise 179 cases, with 10 failures. Of the 179 cases, 112 were wounds of the soft parts, 67 were osteo-articular, these latter giving 7 failures; 49 cases were fractures proper.

If articular fractures be excluded, all other fracture cases treated gave 85.7 per cent of success. In fracture of the long bones, including articular fractures, the percentage of success was 84.4 per cent.

The color fixation acts in two ways. It not only indicates what tissues ought to be removed, but it reveals diverticulæ which otherwise might escape the surgeon, and hinders the spreading of infection. It extends the period during which primary suture may be attempted. In the statistics are included 4 fracture cases operated upon and sutured more than twenty-four hours after occurrence.

W. A. BRENNAN.

ANÆSTHETICS

Clarke, T.: Anæsthetics in Military Hospitals. *Brit. M. J.*, 1918, i, 79.

The patient is given as a preliminary morphine, gr. 1:4, and atropine, gr. 1:150, half an hour before operation. The anæsthetic generally used is ether preceded by chloroform, a separate mask being used for each. A layer of lint covers the mask for chloroform and two layers of lint for the ether mask, thus avoiding the danger of giving a mixture of unknown strength.

Invariably the open ether drop method on a Schimmelbusch mask is used. The average quantity of anæsthetic for an operation of half an hour is 2 drachms of chloroform, and 3 ounces of ether. Clarke has administered nearly 3,000 anæsthetics without one fatal case or any serious difficulty.

He has introduced the Shipway warm ether apparatus and finds it very useful in cases requiring prolonged administration. The type of patient is different from that in a general hospital in peace time. Most of the patients are robust young men living an out-of-door life. Those with shell shock require much more anæsthetic and have a greater tendency to excitement while going under its influence. CARL R. STEINKE.

Silk, J. F. W.: The Administration of Anæsthetics in Home Military Hospitals. *Proc. Roy. Soc. Med.*, 1917, xi, Sect. Anæsth., 1.

Silk states that the war introduces features in anæsthesia which are relatively unfamiliar in civilian practice. With the acute shock of the battle field the home hospitals have little to do, but on the other hand many men suffer from a condition of chronic shock which renders them troublesome from the anæsthetist's point of view. Many soldiers have been subjected to a prolonged suppuration, which has a bad effect upon the heart muscle. Also the dilated heart of overtraining and underfeeding is fairly frequent and when such a case comes to the anæsthetist, trouble is likely to occur.

In military surgery the exceptional cases call insistently for variations in methods of anæsthetization. But the normal or straightforward case is relatively more frequent. Accordingly the first consideration is the selection of a routine anæsthetic and method.

The difficulty of supplying the great number of war hospitals with skilled or even efficient anæsthetists is very great. This, together with frequent and necessary changes in the anæsthetists, renders it desirable to supply a standardized equipment, as simple as is compatible with efficiency. The present outfit is: (1) nitrous oxide apparatus; (2) Schimmelbusch's frame; (3) Clover's inhaler; (4) Junker's bottle (Rigby's safety pattern); (5) tongue forceps; (6) mouth gag.

The use of unmodified chloroform should be avoided, first, because even in the hands of the most skillful, the mortality is relatively high, approaching one to two thousand. Of the deaths reported to the author since January, 1917, 55 per cent or more were due to or occurred under undiluted chloroform. Of these fully 28 per cent died before operation had begun. Secondly, because the author has observed that among the earn-

est advocates of pure chloroform, few know how to give the drug properly. However, the value of this drug in certain cases must be recognized, and when sufficiently diluted with ether in one or another of the well-known mixtures, it forms a simple and admirable method of inducing anæsthesia previous to the continuous use of ether.

Nitrous oxide is not used as often as the author would like to see it, first, because the supply is scanty and irregular, and second, because the average anæsthetist in military hospitals fights shy of it. The anæsthetic of choice for continuous work is ether, and with certain reservations and precautions the author's preference is the open method, following these details:

1. An injection of morphia, 1:4 gr., and atropine, 1:100 gr., less than half an hour before operation.

2. A small piece of Gamgee tissue with a hole in it around the nose and mouth.

3. Schimmelbusch's mask, covered with 12 to 20 layers of gauze.

4. In most cases it is better to partially induce the anæsthesia with a mixture, or a Clover's inhaler; in many cases the author employs ethyl chloride on the open mask.

5. The metal drop flask of McCardie is recommended.

6. The use of Hewitt's open air-way tube, or a smaller or softer tube passed about five inches down the nose, which the author now employs in almost every case.

In cases of chronic shock, morphia may advantageously be used up to the limit of dosage, but in cases of sepsis, malaria, or other heart trouble, morphia should be avoided. In these cases one should avoid all but the most diluted doses of chloroform. As little anæsthetic as possible should be given. Anything like asphyxia should be avoided by diluting the vapor very freely. For this purpose oxygen given by itself or bubbled through the anæsthetic is very useful.

In intracranial cases, morphia is usually unnecessary, as the patient is often in a semi-comatose or dazed condition. For this reason, also, very little anæsthetic is required. The author prefers chloroform, it being desirable to limit the venous congestion so far as possible. He administers it by passing a small stream of oxygen through a Junker's bottle, leading the mixture down the nose, through a soft tube.

The mortality arising from operations of the empyema type is rather heavy. The chronic types seen in the home hospitals are particularly bad subjects for anæsthetics, and without doubt they ought all to have some form of artificial respiration, such as the intratracheal method. These cases should be concentrated in a few of the better equipped hospitals where this method is available. Failing this, chloroform and oxygen should be given gently through a Junker bottle.

In cases of spinal injury, where the patient frequently lies face downward and avoidance of venous congestion is desirable, oxygen and a mixture from a Junker's bottle is advisable.

Orthopedic surgery might be expected to be a special field for the use of intraspinal methods, but this, surprisingly enough, is not the case. Nitrous oxide requires skill to hit upon the precise moment at which the fullest possible degree of relaxation is obtainable. The average cases do well enough with ether, but it must be given without a trace of asphyxia so that there is as little congestion of the veins as possible.

In plastic surgery troubles arise from the presence of blood in the mouth and pharynx, from the necessity of getting out of the way of the operator, and from the difficulty in manipulating the anæsthetic when the jaw is wholly or partly fixed, or is unduly mobile. There is no other operation in which the anæsthetist can be of so much real assistance to the surgeon. In most cases exceptional methods will have to be employed, such as: (1) the intratracheal method; (2) the intubation method of Kuehn; (3) the oil-rectal method of Gwathmey; (4) anæsthesia induced with the patient sitting bolt upright, by means of a nose-tube conveying oxygen and the anæsthetic. Either plan may be supplemented by the use of suction apparatus in the mouth.

ALBERT EHRENFRIED.

Phillips, H. R.: Apparatus for Administering Oxygen with Ether and Chloroform. *Proc. Roy. Soc. Med.*, 1917, xi, Sect. Anæsth., 13.

Phillips describes an apparatus for administering oxygen in combination with ether, chloroform, or both. An oxygen cylinder is connected with a three-bottle apparatus. Valves control the passage of oxygen through the bottles, which contain respectively chloroform, ether, and water.

Experience with the use of this method in nearly 1,100 cases gives evidence of (1) simplicity, (2) economy, (3) absence of cyanosis, and (4) infrequency of postanæsthetic vomiting.

ALBERT EHRENFRIED.

Scott, A. C.: Local Anæsthesia in Major Surgical Operations. *Texas St. J. Med.*, 1917, xiii, 269.

It is not necessary to apply the anæsthetizing agent directly to the tissues to be cut. It may be applied entirely outside the line of incision in such a manner as to secure good anæsthesia and maintain it until after the completion of the operation. This is accomplished in two ways: (1) by thorough infiltration of the skin and subcutaneous tissues on the proximal side of the proposed line of the incision near, but not necessarily within, such a line; or (2) by infiltration of skin and subcutaneous tissues in two lines an inch or more apart between which the incision is made.

To help maintain the anæsthesia adrenalin is used in the solution, with the advantage of reducing local bleeding during the operation.

After the skin and subcutaneous tissues have been incised down to the muscular tissues beneath, the operator should anæsthetize the deep fascia or aponeurosis, giving special attention to the nerve-trunks on the side of the wound from which they come, when possible to locate them. The abdominal fascia or muscular sheaths having been infiltrated and incised, the operator is soon down to the subperitoneal tissue. This is the most sensitive tissue to be dealt with and is not easily anæsthetized if the operator is careless, unskillful or hasty.

The peritoneum is anæsthetized by pressing the point of the needle well into the transversalis fascia, or posterior sheath of the rectus, near the center of the wound.

When the abdominal wall is properly anæsthetized and a sufficiently large wound made to work without strong or rough traction, almost any kind of operation may be satisfactorily done within the abdominal cavity if it does not require much traction upon the mesentery or the separation of firm adhesions.

The preferred solution for local anæsthesia in the Temple Clinic is one-seventh of one per cent solution of novocaine, containing about three minims of adrenalin solution to the ounce, which is added at the time of operation. For this purpose sterile adrenalin solution is kept in 1 ccm. amber glass ampules. EDWARD L. CORNELL.

Sollmann, T.: The Comparative Efficiency of Local Anæsthetics. *J. Am. M. Ass.*, 1918, lxx, 218.

Sollmann has conducted a number of experiments to ascertain the comparative efficiency of local anæsthetics. He divided his work as follows:

1. Intracutaneous method; i.e., infiltration and injection anæsthesia, using cocaine, novocaine, tropococaine, alypin hydrochloride, beta-eucaine hydrochloride, quinine-urea hydrochloride, apothesin, antipyrine, and potassium sulphate.

2. Sensory fibers of nerve-trunks, using cocaine, novocaine and tropococaine hydrochloride, alypin hydrochloride, potassium chloride, quinine-urea hydrochloride, and antipyrine.

3. Motor fibers of nerve-trunks, using cocaine, novocaine and tropococaine hydrochloride, alypin hydrochloride, potassium chloride, quinine-urea hydrochloride, and antipyrine.

He summarizes his investigations as follows:

1. For the anæsthesia of mucous membranes, cocaine, beta-eucaine, alypin and tropococaine are the most useful. Quinine-urea hydrochloride is fairly active. Apothesin, novocaine and potassium chloride are relatively inefficient. Alkalization increases the efficiency from two to four times. The solutions of the anæsthetic salts may therefore be mixed with an equal volume of 0.5 per cent sodium bicarbonate without loss of efficiency, and with a saving of one-half of the anæsthetic. The mixtures, however, do not keep well and should be recently made. The addition of epinephrin does not increase the efficiency and is probably useless.

2. For infiltration and injection anæsthesia, cocaine, novocaine, tropococaine and alypin are about equally efficient. Beta-eucaine and quinine-urea hydrochloride are intermediate; apothesin and potassium sulphate or chloride are relatively inefficient. The efficiency is not increased by alkalization. Epinephrin greatly prolongs the action, and should always be added, except to tropococaine. The anæsthetic action of potassium sulphate or chloride is not great enough to be of real value. A one per cent solution would be equivalent to about 0.125 per cent of cocaine or novocaine. However, it may well be used in place of sodium chloride for making anæsthetic solutions, as suggested by Braun.

Several of the synthetic anæsthetics can completely take the place of cocaine. In view of this fact, it would be feasible to prohibit entirely the importation, manufacture, sale and use of the habit-forming cocaine, except for scientific purposes.

G. W. HOCHREIN.

SURGICAL INSTRUMENTS AND APPARATUS

Adams, J. E.: A Simple Method of Mechanical Fixation for Fracture of Long Bones. *Brit. M. J.*, 1918, i, 12.

In the case of broken bones it is most desirable to have a method of fixation applicable to compound as well as simple fractures. Bone grafting in the presence of sepsis is always doomed to failure. The author calls attention to some of the disadvantages of plates, metal screws, etc.

The bone clip which the author describes is designed to partially encircle the fragments and press them together, favoring rapid healing. It is made of tempered spring steel and exercises continuous elastic pressure on the fragments of bone within its grasp. Not more than two-thirds of the circumference of the bone should be grasped by the clip. The strength of the spring is sufficient to counteract laterally acting forces tending to displace the fragments, and the teeth by which the bone is gripped will resist a force acting in its long axis. All that is necessary after the clip is in position is immobilization by splint to avoid violent movement and no extension need be applied to the limb. A transverse fracture can be quite well secured by a single clip or by one which is made especially wide.

A linear incision is made down to the seat of the injury, the long fragments are identified, and the way in which they require to be fitted so as to obtain perfect apposition is noted. In oblique fractures forcible extension with rotation of one or the other fragment is usually satisfactory, but with jagged and irregular bone surfaces, protrusion of the ends through the wound and then dovetailing them into position by manipulation is the better plan. After the bone ends have been gotten into perfect apposition, the open clip by means of a special instrument or introducer is passed around the bone at the seat of fracture and adjusted until it holds the fragments

in a firm grip. The spikes or teeth in the clip obviate the need for screws or nails and they allow a small space between the metal and osseous tissue, so that pressure necrosis is hardly to be feared and there is no tendency for the clip to become buried in the bone.

The author has recently operated upon six cases of simple fracture of the femur, with a perfect result functionally and anatomically and no shortening except in one case. In the exceptional case suppuration occurred and union was delayed; however, satisfactory alignment of the femur has been maintained. The author feels that the use of the clip may be extended to compound fractures.

The clips fit best over round bones, but they have been of considerable service in such bones as the tibia. The clips are easily removed, should occasion arise later, by the introducer which is made in two pieces or by using the point of a Lane retractor as a lever to lift up the spring and dislodge it from the bone.

The author recently employed one of the flanged clips with good results in the case of a transverse fracture of the femur in a child, the flange being secured to the upper fragment with a clip having no teeth. He feels that these clips are worthy of trial in cases of compound fracture due to gunshot wound, the cases being selected with due reference to the accessibility of the bone ends and the clips applied within a short time of the receipt of the wound. They are not open to the same objection as Lane's plates, in that they are not likely to carry infection before them and produce extensive osteitis. They hasten the repair of the fractured surfaces even in the presence of infection, and treatment of the wound by Carrel's or similar methods would in no way conflict with their efficiency as an internal splint.

Oblique fractures are most amenable to the clip method of fixation, but existence of comminution is probably no bar to success. When there is a considerable gap in the bone, some external extension apparatus is required to retain the normal length of the limb, and clips are not suitable.

The clips are made of spring steel and in sizes ranging from one-half to one and one-half inches in diameter. Those suitable for oblique fractures are provided with teeth turned over from the edge to grip to the cortex of the bone. It is desirable to use the smallest clip which will embrace the bone so as to secure the maximum degree of elastic pressure.

V. C. HUNT.

SURGERY OF THE HEAD AND NECK

HEAD

Salinari, S.: War Wounds of the Head (La ferite d'arma de fuoco del capo). *Riforma med.*, Napoli, 1917, xxxiii, 1053.

Salinari introduces his article by referring to the protection afforded by the new helmets against head wounds. Reverchon for example reported that in 1915 every third wound was a head one. Chevassu found that of 20 men with cranial injuries, 13 of which had carried the helmet and 7 had not, 5 of the wounds in the latter were fatal, while none of the helmet carriers died.

Salinari's statistics comprise 15,000 wounds, of which 1,827 were head wounds. Five per cent of the wounds were facial, and seven per cent, or 1,079 cranial. Of these 1,079 cranial wounds, 583 were soft part wounds; 325 involved the cranial bones, and 171 were meningeal and encephalic.

Of 748 facial wounds, 257 were of the soft parts.

Experience has taught the author to distrust wounds which apparently involve the soft parts alone, as he has seen many such with later severe cerebral developments. The slightest evidence of a fissure or depression in the bone should be sufficient indication to subject the patient to a thorough X-ray examination.

The author discusses the pathologic anatomy of cranial lesions, especially of those involving the meninges.

As regards symptoms, in a great many cases there is very little pain or general disturbance at first, and even in a few days after a trepanation, the recovery is rapid.

The favorable results which the author has observed to follow the immediate operative treatment of cranial wounds and the end-results lead him to acquiesce in Oehler's assertion that the triumph of war surgery is in the treatment of cranial wounds. Only two circumstances ought to deter one from intervention, namely, an insufficient surgical equipment, and the patient's condition, which would include traumatic shock.

The author deals in detail with the operative treatment of different types of lesions of the head. In cases where there were symptoms of irritation or of meningo-encephalic lesions but without clear evidence of a skull injury, a few days were allowed to elapse before operation. Observations were made on the spinal fluid and according to the findings and the general progress, a trepanation was done or not. Then if the dura was found intact, nothing beyond decompression and surgical clearance was done, the dura being left intact.

The general rule in other cases and with tangential wounds, no matter what the state of the bony lesion, was to open up the dura and relieve internal pressure.

In penetrating wounds with retained projectiles, the conduct followed depended on the case. The

most exact and painstaking localization possible of the projectile was made radiographically. The route of approach was then studied before attempting extraction, so as to spare the patient the disastrous effects of a more or less blind search for the projectile. Only when the projectile could be reached without undue manipulation was its extraction attempted. Where there was no interference, toilet of the wounds by means of drainage was done; no attempts were made to cause the projectile to migrate toward the point of entry. Bier's gravity suggestions result merely in increasing the local symptoms of suppuration, etc.

The author deals in detail with the technique of searching for and the best method of extracting bone fragments from the cranial cavities.

The internal wound is drained but is never systematically sutured owing to the fear of later infective complications. Many patients, in fact, who seemed out of all danger developed classic meningitic or excephalitic symptoms and succumbed in varying periods of time.

Generally paralytic motor symptoms disappear after operation, even when the lesions are very extensive. But in some regions they persist, as well as certain sensory paralyses. Paretic phenomena generally disappear within twenty-four hours.

Cerebral hernia has always been the sign of a deep-seated infection. Hernia of itself is not an absolute indication for intervention. The author uses compression only, according to the method of Delagenière, by suturing strips of the neighboring skin loosely over a disc of gauze placed on the herniating part. With patience this succeeds in reducing the hernia, by keeping the patient's head high. A lumbar puncture is made if there is much headache. The stitches can be removed and the disc renewed after eight or ten days.

The author has never seen a cranial hernial tumor spontaneously disappear. In cases where reduction is not obtained under treatment, the prolapsed mass tending to become softer and purplish in color, the author uses the thermocautery to remove it.

The final part of the author's article deals with a consideration of plastics for repair of losses in cranial substances.

Owing to the ultimate complications which may arise, as well as the difficulties in following the course of his operated patients through the various hospitals, the author thinks it useless to give any conclusive statistics with regard to results.

W. A. BRENNAN.

Sieber, P. R.: Pulse-Rate and Blood-Pressure Observations as an Aid in the Treatment of Head Trauma. *Ann. Surg.*, Phila., 1918, lxvii, 51.

The author, as a result of his observations in a series of 76 cases of fracture of the skull resulting from acute head injury, lays great emphasis upon the pulse-rate and arterial pressure, these symptoms being used to determine the degree of encroachment on the vital centers and the necessity for operative interference.

Cushing in experiments upon dogs has shown that by increasing the intracranial pressure equal to that of the arterial pressure the resulting anæmia stimulates the vagus center, thereby slowing the pulse. At the same time the vasomotor center is stimulated, causing a rise in arterial pressure sufficient to again restore circulation to the brain. By gradually increasing the intracranial pressure the physiological response will cause a rise of arterial pressure to a point two or three times that of the normal pressure.

Fractures of the skull are often accompanied by an increase in intracranial pressure and furthermore this tension frequently rises to such a height that the cerebral vessels are compressed with the resulting anæmia and death. In many instances there has been a striking similarity in the symptoms preceding death in cases of fracture and those produced in animals by increasing the intracranial pressure. Observations have shown that with the increase in stupor there is a gradual increase in the blood-pressure and decrease in the pulse-rate. In the final stages there is a stertorous, or perhaps a Cheyne-Stokes breathing, the temperature rises, the reflexes disappear and the patient becomes relaxed. The blood-pressure gradually falls to zero and the respirations cease. The vasomotor mechanism has been unable to maintain the blood-pressure above the intracranial tension and supply sufficient blood to the respiratory center.

The author divides these cases of head trauma into three groups:

1. Those which at no time show any evidence of intracranial pressure. In these cases surgical interference is not indicated unless fragments of bone are depressed.

2. Those cases showing signs of a definite increase in intracranial pressure. In these the observations of the blood-pressure and pulse-rate are most useful in determining the degree of intracranial pressure and as an indication as to whether operative interference is necessary. In nineteen of the author's cases operation was deemed necessary and of these ten made a good recovery. Two of the deaths were due to pneumonia and one to meningitis.

3. Cases presenting signs of advanced medullary compression or those in which there is evidence of severe laceration or contusion of the brain. Twenty-three of the author's cases were included in this group. In many of these the regulatory vasometer mechanism has collapsed, while in others the rapidly decreasing arterial pressure and increased pulse-rate indicated that the vasomotor mechanism was making a feeble effort to supply the bulbar centers. Of these cases twenty resulted in death. Twelve were operated upon with three recoveries. The subtemporal decompression was the operation of choice in relieving pressure symptoms.

GATEWOOD.

Morestin, H.: Shell Wound of the Face; Repair Operations (Plaie de la face; mutilation du nez; destruction des branches montantes des maxillaires supérieurs; mutilation de la paupière inférieure droite; perte des deux yeux; opérations reparatrices). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1397.

In the case reported by Morestin a piece of shell had torn away the right lower eyelid; the right eye had burst; the root of the nose was carried away; and the two ascending branches of the maxilla were smashed in bits, especially on the left side. There was a large suborbital orifice, and vision was completely lost.

The patient was under disinfection treatment from the end of June until September. Repair of his disfigurement was then begun by excision of a tumorous fragment of the lower palpebral conjunctiva on the left side. The palpebral edges were freshened and blepharorrhaphy done. The eye was definitely closed.

In October the bridge of the nose, which was embedded in the fossa, was freed, repaired, and sustained in its required position by supports passed through the nostrils.

Late in November the right eyelid was treated by strips of suborbital skin. Whatever was left of the edges was freshened and a blepharorrhaphy again done.

In December the sixth and seventh left costal cartilages were removed for use in reconstructing the nose and to fill the breach in the center of the face. After extensive skin elevation, a ring of cartilage was placed vertically under the skin of the forehead after making a transverse incision which was to serve as the axis of the strips for the reconstruction of the nose. This was placed slightly to the right of the median line. To the right and left other pieces of cartilage were installed to serve as supports to the nose and the lost parts of the upper maxillaries. The losses being asymmetrical, the flaps had to be planned accordingly.

To the right of the axial stem which had been sutured to the deep face of the skin two large pieces of cartilage were fixed and one to the left, to be trimmed later.

On February 1 the contour of the very extreme skin strip was traced and the incision sutured. The object was to obtain an autonomous strip and develop circulation from its pedicle. February 21 the strip was detached from its deep bed. On the following days it was gradually subjected to torsion a few degrees each day. The pedicle was to the left and at the level of the inner extremity of the eyebrow and the adjacent part of the orbit. The strip decended bit by bit in front of the right brow and orbit and finally before the nasal breach.

On March 24 the junction of the strip with the nasal ridge was made. April 1 it was united to the right edge of the breach; on April 16 the left side was united and the breach was entirely closed. In order to give definite form to the nose, different retouchings were made between May and December. The results are very good. The reconstructed nose is quite solid. There is no looseness between the cartilage pieces transplanted and the bones to which they are united. The skin which covers the root and bridge of the nose and part of the suborbital region has united without inequalities or depressions. The nares are free, and largely permeable to respiration. In short, the patient has neither inconvenience nor pain. There are seven illustrative photographs. W. A. BRENNAN.

Aymard, J. L.: Nasal Reconstruction; with a Note on Nature's Plastic Surgery. *Lancet*, Lond., 1917, cxciii, 888.

While methods for reproducing the complete nose have in the past been discussed in textbooks, the causes for failure are seldom dealt with, and details of the work are deficient.

Almost the greatest difficulty presenting itself is the fact that where the nose has been destroyed by war injury, the scar tissue surrounding the lost organ has to be utilized for the junction of the new flap. The most common cause of failure is probably due to the fact that the nasal cavity is not an ideal aseptic one at any time, but is rendered much more unhealthy by damage to one or more sinuses and their surrounding tissues. No plastic operation of any kind can possibly suffer by reasonable delay.

The flap should be taken, if possible, from the site likely to lead to the least ultimate disfigurement. The lining of the flap should take some form other than scar tissue. The new organ should, as much as possible, correspond with the original. The supporting framework should simulate the original. The bed area for the new organ should be most carefully prepared. The author has used a new flap method, taking a long pedicle flap with its base near one clavicle and forming the nose upon the chest on the opposite side, keeping the head slightly bent upon the chest for fourteen days. If this chest flap fails, he uses two flaps, one from the forehead and an alar flap from the cheek.

The necessity for some form of covering other than scar tissue internal to the nasal cavity is generally admitted, and the author has endeavored to overcome this difficulty by removing the entire periosteum. In attempting to obtain resemblance to the former organ, it is a distinct advantage to have a skillful sculptor.

The author is in favor of an all-cartilage framework. Cartilage will attach itself to bone exactly as will bone to bone, and the resistance of cartilage to mild sepsis is an argument in its favor; also, cartilage remains constant where bone, unattached, is prone to disappear.

In the preparation of the skin area upon which the new nose is to be embedded, it is advisable to undercut the skin and tissues in order to contract the opening and bring healthy new tissues into the region for this purpose.

In the preliminary treatment it is essential to

get the patient in as good general health as possible. The establishment of the nasal passages must be well carried out. Common sources of trouble are suppurating lachrymal sacs, antra, sequestra, portions of nasal bones embedded in the cheeks, and the condition of the patient's teeth.

Removal of the cartilage to be used as the supporting framework should be done first, usually from the costal cartilages, and the wound closed before any further work is done to prevent infection.

As a dressing the author uses ambrine wax with an addition of 50 per cent paraffin, and sometimes a light gauze dressing. Massage is of the greatest value later in straightening the nose and in improving the condition of the skin. V. C. HUNT.

Pont: Rhinoplasty and Nasal Prosthetics (Rhinoplastie et prothèse nasale). *Lyon méd.*, 1917, cxxvi, 508.

Pont thinks that restoration of the nose by rhinoplasty is always preferable to prosthetics. Prosthesis should only be employed (1) when rhinoplasty is impossible or contra-indicated; (2) when rhinoplasty will not give satisfactory æsthetic results; (3) as a temporary expedient before or during the different phases of surgical intervention.

At present rhinoplasty with cartilage grafts is the method of choice. Tuberculous, syphilitic or cancerous lesions generally exclude rhinoplasty; similarly in extensive facial burns the bad condition of the tissues would not give sufficient nourishment to repair strips. The principal indication for rhinoplasty is therefore found in pure traumatisms with extensive loss of substance.

Some cases of rhinoplasty executed at the maxillofacial Surgical Center of Lyons are detailed and illustrated.

The prosthetic methods used by Pont have previously been described. An apparatus is furnished to the patient which enables him to make a new artificial nose of plastic paste as often as necessary. This gives an æsthetic prosthesis. But Pont has found that patients neglect this because it is troublesome, and that the desired end is not accomplished. He therefore now gives in addition a new apparatus for wax models which can easily be made and may be changed each day and put on as easily as a pair of spectacles. This he calls a work-day apparatus which fulfils its purpose satisfactorily.

W. A. BRENNAN.

Cole, P. P.: The Treatment of Wounds Involving the Mucous Membrane of the Mouth and Nose. *Lancet*, Lond., 1918, cxciv, 11.

The following is the author's summary as to the manner of obtaining the best surgical and cosmetic effects under such circumstances.

1. The result in any given case is largely influenced by the initial treatment adopted.

2. The whole plan of treatment should be the joint evolution of surgeon and dentist working in concert to attain a common aim.

3. Open-bite splints should invariably be used in the type of case considered.

4. The method known as "bringing the parts together" should be recognized frankly as unsatisfactory and should be abandoned.

5. Skin is an admirable substitute for mucous membrane in that its texture is suitable and its extent unlimited.

6. Radiations may render the plastic surgeon such valuable assistance that facilities for treatment by this method should be provided in hospitals or centers for the treatment of jaw injuries.

C. B. HOLLINGS.

Morestin, H.: Cartilage Grafts in the Repair of Extensive Losses of the Jaw (Pertes de substance trés étendues de la machoire inférieure; transplantations de cartilage). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1712.

Morestin reported 5 cases of extensive war injuries of the lower jaw in which he had made plastic operations using cartilage grafts. The æsthetic result is remarkable and Morestin claims that the functional benefit is incontestable.

Sebileau criticized the value of repair operations of the lower jaw with cartilage. Laying aside the æsthetic results he says that a fracture of the lower jaw can recover by pseudarthrosis and without the fragments placing themselves in such position that defective dental articulation results.

As regards the value of the consolidation obtained by Morestin with cartilage grafts, this can be judged from the anatomic and functional standpoints. From an examination of the patients exhibited he finds that the fragments are not consolidated either anatomically or physiologically, neither subjectively nor objectively. The question is important because it concerns the future of an operation destined for the betterment of the wounded. The value of a sugical therapeusis is scientifically based on the results that it gives to each patient to whom it is applied.

W. A. BRENNAN.

Chatelin, C. H., and DeMartel, T.: Wounds of the Skull and Brain. Paris: Masson & Cie., 1917.

In a preface to this work, Marie sums up well the chief differences between cerebral pathology under ordinary conditions and that following war wounds in the following words: "Cerebral pathology, as we knew it, was almost exclusively a pathology of the white matter. War wounds have shown us quite different conditions, viz., lesions of the cortex, to the more or less complete exclusion of the white matter. And so this new pathology resembles infinitely more nearly the conditions of experimental physiology than did the former cerebral pathology. The latter, which could be termed cerebral leucopathology, showed us above all massive syndromes, i.e., hemiplegia, persistent aphasia, hemianopsia, etc., while the new cerebral poliopathology affords a consideration of cellular

symptoms, monoplegias, dissociations at times very delicate."

Chatelin presents solely a study of cases of head injury which have recovered from the primary effects of the wound, and which can be subjected to a minute neurological examination. It is limited to the late results, i.e., to those which persist several weeks after receipt of the wound and in which a careful clinical study can be carried out.

In the examination of the patient, great stress is placed on a careful interrogation of the wounded man as to the exact circumstances under which he received his injury and the first symptoms noted, subsequent events following the injury, surgical operations undergone, and present symptoms.

The actual condition of the wound is to be carefully noted, especially as to the cutaneous scar, healing, loss of bony substance, and depth of involvement.

Craniocerebral topography is next discussed in its relation to localization of craniocerebral injuries, followed by neurological examination of the patient in regard to motion, reflexes, sensation, co-ordination, equilibrium, gait, speech and special senses. The examination is completed by lumbar puncture and radiography.

The subjective symptoms common to all wounds of the skull are presented.

A detailed discussion of wounds of the various regions of the brain, with short discussions of meningitis, abscess, epilepsy, and foreign bodies is given.

DeMartel's discussion of wounds of the skull, though shorter, should be of more particular interest to the surgeon. The following is a summary of the more important points brought out:

The importance of protective measures, directed to minimize the gravity of wounds of the skull, such as wearing of the steel helmet, keeping the hair cut short, and scrupulous cleansing of the scalp after receipt of the wound, is pointed out.

It is important that hospitalization of the wounded man should be in a place where he can be operated upon and followed by the same surgeon for several weeks. There is generally no urgency about operating on cranial wounds, as is the case with wounds of the digestive tract or circulatory system. If the abdomen, like the skull, contained only solid organs, instead of hollow viscera filled with septic matter, the same would apply to it. On the contrary, there is a distinct advantage in postponing operation on skull wounds for a few days, in order to allow protective adhesions to form and thus limit the field of infection. Wounds of the brain gain everything by being evacuated at once to a hospital where they can remain for several months, if necessary, under the observation of the same surgeon who has operated. Immediate operation on a penetrating wound of the skull, especially if carried out by the usual method of enlarging the orifice with rongeur forceps, can hardly fail to aggravate and disseminate the infection by breaking down the protective adhesions which limit the traumatized area.

For three years the author has performed all cerebral and cerebellar operations under local anæsthesia. The advantages of this over general anæsthesia lie in the fact that the patient can cooperate with the surgeon by modifying his position, by making at will movements of forced inspiration and expiration, the former diminishing venous hæmorrhage and the latter separating the edges of the cerebral wound, and furthermore the shock and hæmorrhage incident to a general anæsthesia are voided. The anæsthetic solution consists of 0.5 per cent novocaine and 0.0005 per cent adrenalin in normal saline.

For the operation, if his condition permits, the patient is seated astride a chair, facing the back, with his arms supported on a special rest attached to the back of the chair, and his head resting on his arms.

Whenever possible, i.e., whenever the loss of substance of the skull is slight, as is most frequently the case, the author makes a quadrilateral osteocutaneous flap. After injection of the local anæsthetic, a silk basting suture is placed at the base of the proposed flap, in order to insure complete hæmostasis. The author's special hand and power-driven instruments for cutting the bone are described, in addition to the technique to be employed when only simpler instruments are available.

The advantages of the temporary osteocutaneous flap over the usual method of trephining and enlarging the breach in the bone with the rongeur forceps are many. The temporary flap does not leave any trace, any deformity, always produces a cerebral decompression of benefit to the patient, is not the cause of cerebral herniæ of mechanical origin, as so often follows the classical trephining operation. It gives a very broad view of the lesions, and can be reopened as often as necessity demands. Enlargement of the bony opening with the rongeur presents none of these advantages, but is absolutely indicated every time the bony destruction is considerable and does not allow of an osteocutaneous flap.

If at operation the dura is found to be intact, it should not be opened under any pretext. To open the dura in order to evacuate a hæmatoma or brain pulp resulting from a violent contusion, means almost certain infection of a field hitherto aseptic and invites meningitis and encephalitis. If the dura is perforated, if cerebral pulp escapes through the opening, if the still intact dura is black and immobile, if the existence of exudate or an area of softening is proved, it is quite logical, on the contrary, to enlarge the meningeal opening and to evacuate gently and as completely as possible the already infected region. The dura must then be sutured with care except at the place where it was torn. At this point a cigarette drain is placed. Rubber tubes are never used for drainage. In order to empty completely collections of blood, softened cerebral substance and splinters, without injuring the normal tissue forming the walls of the cavity,

it is best to pass the finger gently in all directions, under a continuous current of warm saline solution. Foreign bodies of steel are removed by means of an electromagnet constructed on the principles of the Hirtz compass used in localization.

It is necessary to observe caution in the use of lumbar puncture in the early days of a wound of the skull, because of the danger of diminishing the volume of the brain which thus detaches itself from the membrane to which it was adherent. The meningeal space, hitherto potential, thereby becomes real and exposes itself greatly to infection. Later, however, lumbar puncture may render great service in lowering intracranial pressure and may be repeated frequently with benefit, particularly in cases in process of recovery who complain of headache and vertigo. R. H. Ivy.

Velter, E.: Hæmostasis by Muscle Strip in Cranial Surgery (Sur l'hemostase par lambeau de muscle en chirurgie cranienne). *Presse méd.*, Par., 1918, p. 31.

Velter calls attention to the great importance and difficulty of obtaining good hæmostasis in cranial and cerebral surgery. The method inaugurated by British surgeons especially, such as Horsley, Sargent and Holmes, by the application of muscle strips in order to obtain hæmostasis of the bone and venous sinuses he considers most effective and satisfactory, and regrets that it has not had wider acceptance and application by surgeons at the present time.

The technique is simple. A piece of any muscle sufficient for the purpose is cut. After rapid removal of clots with a tampon, the piece of muscle is placed on the bleeding point and pressed down firmly with the finger or any soft instrument. It adheres in a minute or so and stops the hæmorrhage completely. It is applicable only to hæmorrhages from the bone or from the venous sinuses.

Velter has tried this method in a number of cases and has found it a rapid and effective method. W. A. Brennan.

Rouhier, G.: Cartilage Grafts and Loss of Cranial Substance (Pertes de substance cranienne et greffes cartilagineuses). *Presse méd.*, Par., 1917, p. 722.

Rouhier has repaired 34 cases of loss of cranial substance by cartilage grafts according to the method devised by Morestin, with slight modifications. He has never had any sloughing of the graft and the results as long as they could be observed have been quite satisfactory.

Complete cicatrization of the wound is awaited. Three months at least ought to be allowed for this. Then the skin is incised around the scar and pediculated skin strips dissected out. The fibrous scar is dissected and the bony edges of the orifice trimmed. A piece of costal cartilage is removed from the patient and trimmed to shape. This is done during the cranial operation, the cartilage being immediately placed in a compress soaked in warm salt solution. It is at once placed in position, the most rigorous aseptic precautions being observed. The perichondrial face of the graft is turned toward the brain. The edges which have been shaved down are inserted under the pericranial periosteum. A notch cut on the outside surface of the graft allows it to be easily adapted to the required curvature. The cutaneous strips are then turned and sutured over the graft.

The author says that there is little fear of any ulterior endocranial proliferation of the graft; a reduction in its size is more likely. It becomes fixed at about the end of three weeks; but it is well to keep the patient under observation for six weeks. The patient gets the impression of solidity, and there is no fluctuation at the site of the graft even during severe coughing.

The author cannot give a definite opinion as to the final outcome of such grafts, as his cases are only about ten months old at most. More than one piece of cartilage may be used in repairing a defect. W. A. Brennan.

Villandre: Cicatrization of Cranial Wounds from the Surgical Viewpoint (Cicatrisation des plaies du crâne au point de vue chirurgical). *Arch. de méd. et pharm. mil.*, Par., 1917, lxviii.

Villandre thinks that cicatrization of a cranial wound is not always an indication of recovery. It must be borne in mind that cranial traumatisms leave definite lesions which may progress either: (1) by the organization of intradural or intracerebral blood clots; (2) by cystic transformation of losses of encephalic substance, either effected mechanically or by necrosis of cerebral herniæ or by more or less localized encephalitis; (3) by latent infection in the vicinity of foreign bodies, bone, fragments or projectiles, or even in the thickness of the cicatrix. Such a latent infection may be suddenly awakened and cause late complications; (4) finally, when a cranial wound shows slow cicatrization with a fistula alternately dry and suppurating, this condition may precede encephalitis.

Of 450 cranial wounds examined in the author's service, secondary intervention owing to the development of infection was necessitated in 47 cases with a cranial fistula and 14 with encephalic abscesses. In 23 of these a projectile or some other fragment was extracted. If to these be added the secondary operations for epileptic attacks without cerebral infection, there is a total of 303 secondary operations in 450 cases of cranial wounds.

The different findings show that:

1. In the immediate treatment of cranial wounds, mechanical disinfection of the wound and extraction of foreign bodies must be practiced as early and as completely as possible.

2. In the treatment of secondary complications, whether infective or not, a continuation of the treatment must be assured in special surgical units. This will obviate many errors both in the treatment

itself, as well as in the disposal of the wounded. There should be proper co-operation between the first aid station and the territorial hospital where such cases of head injuries are sent.

W. A. BRENNAN.

Dandy, W. E., and Blackfan, K. D.: Internal Hydrocephalus. *Am. J. Dis. Child.*, 1917, xiv, 424.

Twenty-six cases of internal hydrocephalus have been studied, 15 of the obstructive and 11 of the communicating variety. These cases have been studied with intraventricular and intraspinal injections of phenolsulphonephthalein.

Postmortem examinations have demonstrated an obstruction in every case in which an obstruction has been shown clinically by this test. The obstruction may be a congenital malformation or an inflammatory process or tumor, and may occur at any part of the ventricular system, but usually at the aqueduct of Sylvius or the foramina of Luschka and Magendie.

In all cases of obstructive hydrocephalus there is practically no absorption from the ventricles and frequently a normal absorption from the subarachnoid space. Hydrocephalus results because the fluid is mechanically prevented from passing from the ventricles, where the fluid forms, to the subarachnoid space, where it is normally absorbed and where only it can be absorbed.

Communicating hydrocephalus is caused by a barrier of adhesions at the base of the brain which mechanically prevents the cerebrospinal fluid from reaching the cerebral subarachnoid space where the greatest part of absorption normally takes place. The various cisternæ or centers for the distribution of cerebrospinal fluid are more or less obliterated by adhesions.

Absorption of cerebrospinal fluid is a general process from the entire subarachnoid space, and communicating hydrocephalus results because only a fraction of this area can be utilized for absorption.

These pathologic findings harmonize with the clinical phenolsulphonephthalein tests, which show a greatly diminished absorption from the subarachnoid space.

Obstructive and communicating hydrocephalus is, therefore, essentially the same, and, in reality, each is due to obstruction. In the obstructive variety the obstruction is in the ventricular system; in the communicating variety the obstruction is in the subarachnoid space.

Obstructive hydrocephalus may, by operation or spontaneously, change to communicating hydrocephalus, or the reverse may occur spontaneously. Careful studies with the phenolsulphonephthalein test will indicate these possibilities.

Meningitis is by far the greatest etiologic factor in both types of hydrocephalus and probably always causes the communicating variety. This may be either prenatal or postnatal. The meningitis may be of a very mild grade and easily overlooked.

There is a definite relationship between a meningocele and internal hydrocephalus; both usually result from the same cause. The removal of a meningocele may aggravate a fairly well-balanced or even arrested case of internal hydrocephalus. This probably results from a diminution of the absorbing area.

Spontaneous recovery of internal hydrocephalus sometimes occurs. The surgical treatment of internal hydrocephalus has now a definite anatomic basis and hopeful prospects. The operative results of a series of cases will appear in a subsequent communication.

EDWARD L. CORNELL.

Gross, G., and Houdard, L.: Primary Suture of Craniocerebral Gunshot Wounds (La suture primitive des plaies cranio-cérébrales par projectile de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2188.

The Interallied Surgical Conference last May concluded that in favorable cases where the dura was intact, reunion could be made by first intent; and if the dura mater and brain were involved the craniocerebral wound could be treated by primary or secondary suture after sterilization. The authors think that primary suture of such wounds should always be practiced. Their practice is in all cases where the dura is intact to suture at once. When the dura is injured, and there is no projectile, after clearing and cleansing the area they suture, if such is anatomically possible. Generally they find that the removal of cranial projectiles has more disadvantages than advantages. In case of very large projectiles operation is useless; the extraction of very small projectiles is more harmful than otherwise.

The authors have treated 42 very severe craniocerebral lesions by primary suture. These were discharged in from forty to sixty days, although there was more or less abundant loss of cerebral matter in these cases on their arrival in the author's ambulance service.

The total results of the sutured head injuries are tabulated by the authors. There were in all five failures in 279 wounds treated.

The table shows 114 lesions sutured in which the dura was intact. Of these there were 107 recoveries and 7 deaths. Four of these deaths were due to shock or other complications. Sixty-three cases of craniocerebral wounds were sutured, with 42 recoveries and 21 deaths. Ordinarily a large number of the craniocerebral wounds develop abscesses or encephalitic complications before the third week or by the end of the second month.

Suturing prevents such complications. Two-thirds of the authors' cases left the station cured in less than sixty days. The authors claim that primary suture guarantees against secondary infection, which is the direct cause of the late complications; for the same reasons the later developments of cranial wounds are much diminished.

The only contra-indications to immediate suture admitted by the authors are very extensive loss of

skin and cranium and the general state of the patient.

Since the authors adopted primary suture in the case of cranial wounds their operative mortality has fallen from 56 to 33.3 per cent.

W. A. BRENNAN.

Payr: Elderwood Drains for Cerebral Wounds. *Deutsche med. Wchnschr.*, 1917, xliii, No. 16.

Payr of Leipzig thinks that elderwood drains are admirably adapted for use in cerebral wounds, on account of their lightness, the character of their internal and external surfaces, their consistency and hygroscopic qualities.

Glass and metal tubes are too heavy and too rigid for such wounds; rubber drains slip out of position. Capillary wick drains soak up the secretions and the cerebral necrotic matter.

Payr says that elderwood drains are cheap and easily made in different sizes and shapes, and possess these advantages:

1. They have practically no weight.
2. The hollowed out center can be brought to any degree of smoothness desired and can be polished time after time and used again.
3. Tubes of any length, thickness, etc., can be made quickly.
4. The material is easily obtainable and costs almost nothing.
5. By boiling or sterilizing the tubes become very pliable and can be adapted to the shape of any wound fissure.
6. They are very hygroscopic and easily become adherent to the cerebral substance, so that they do not change position. By soaking in liquid paraffin or melted wax, they can be made impervious. These tubes unite in themselves the tubular and capillary principles of drainage.

When the wounds are large, several of these drains may be used. Their weight will be practically nothing on the cerebral matter. The author never observed necrosis from their use, as was observed when other tubes were used.

The author treated six cerebral abscesses of various localities and age with these drains, all of which recovered.

W. A. BRENNAN.

Osnato, M.: An Interesting Pontine Syndrome. *N. Y. M. J.*, 1917, cvi, 1026.

The case here reported is of a longshoreman who, prior to this condition, was perfectly well. He was suddenly stricken two years ago with paralysis in the right arm. He believed that there was also paralysis of the right face. There was no loss of consciousness, and he did not fall. Five or six weeks later he fell to the ground in an unconscious condition, and remained so for a few hours. When he regained consciousness, he found that his right leg was paralyzed. The paralysis of the leg was flaccid, while that of the arm was spastic.

He developed peculiar mental symptoms of distrust, suspicion, condemnation toward his associates, and moodiness. There was no memory or intelligence defect, and no signs of apraxia, aphasia, alexia, agraphia, aminia nor asterognosis. All cranial nerves except the seventh and eighth were functioning properly. The pupils reacted to light and accommodations. There was no nystagmus.

In the distribution of the facial nerve, it was found that the left eyebrow was on a lower level than the right. There was a distinct drawing of the angle of the mouth to the right. Taste reactions to bitter, sweet, sour, and salt were absent in the anterior two-thirds of the left side of the tongue. The cochlear pathway of the eighth nerve was considerably affected. Hearing on the left side was gone.

A reaction of degeneration was present in the muscles supplied by both branches of the facial, therefore the lesion here was undoubtedly nuclear or at the exit of the root fibers. The lateral fillet on the same side must also have been involved at or near its decussation. There was no Romberg sign.

The reflexes showed an increase in the right triceps, biceps, and pateller over the left side. The abdominal, epigastric and cremasteric reflexes on the right side were absent. The right ankle-jerk was more active than the left and there was a distinct Babinski reflex and clonus on the right side.

There was no deviation of the tongue or uvula. There was a distinct loss of power in the muscles in the left side of the face, the right arm, and the right leg, most marked in the latter. Sensation in the right arm and leg showed a marked diminution to touch discrimination and a diminution particularly of light touch as tested by cotton wool. There was a marked hyperæsthesia to pain and temperature in the right leg below the knee. Sensation in the face was perfectly normal on both sides. Position sense was normal and vibration also appeared to be normal. Pressure sense was diminished slightly in the right half of the body.

It was concluded that this case presented a pontine lesion occurring at the level of the nucleus of the seventh nerve and the decussation of the lateral fillet, involving the left side, also the median fillet to a slight extent, the spinothalamic tracts which at this level are very close to the median fillet, and involving finally the pyramidal tracts and the nuclei of the pons. It will be remembered that the nuclei of the pons give rise to those fibers of the middle peduncle of the cerebellum which go to the cerebellum of the same side, all connections of the cerebellum being uncrossed; this might account for the ataxia in the left or sound leg. Another possibility should be considered in this connection, for the ventrospino-cerebellar tract is very close to the lateral fillet at this point and it is possible that the ataxia in the left leg can be explained by an involvement of this tract. Sections through the level of the seventh nerve nucleus often show this tract as it

goes upward and outward to reach the superior peduncle of the cerebellum. The lack of tone in the right leg may possibly be accounted for by the break in the efferent path from the pallium to the cerebellum which is crossed. The loss of taste in the left tongue is obviously explained by an injury to the pars intermedia of the seventh nerve. The root fibers of this portion of the seventh must be involved because the posterior third of the tongue retains the sensation of taste which is supplied by the nucleus of the fasciculus solitarius which contains the sensory portions of the ninth, tenth, and seventh nerve nuclei. At this level it would be impossible to reach this nucleus. M. A. BERNSTEIN.

Bell, W. B.: Experimental Operations on the Pituitary. *Quart. J. Exp. Physiol.*, 1917, xi, 77.

The author carried out a series of operations in order to investigate (1) the general effects produced by pituitary lesions; (2) the effects of these lesions on the genitalia; (3) the effects produced by the pituitary lesions on the other organs of internal secretion.

Paulesco in 1908 evolved the operative procedure known as the bitemporal route which has materially simplified the technique and has led to more reliable results. The author's researches concern themselves in testing the correctness of previous experiments carried out by Paulesco and by Cushing, and in attempting to gain further information concerning the experimental pathology of the pituitary. Reliance as to the structural conditions present was placed only on the results of complete histological examinations, which included the examination of the pituitary tissues removed and the site of removal; also of the genitalia before and after operation and of the other endocrine organs after the production of the pituitary lesions.

The operative technique used by the author is described in detail. Twenty-seven female dogs were subjected to operation, two of which died as the result of the operative procedures, as distinct from the actual lesions produced on the pituitary. Ether was administered by the intratracheal method. Most of the animals used were from four to seven months old. Hæmorrhage was a frequent annoying accompaniment of the operation, but in all except one case it was controlled without difficulty. In no case were there severe postoperative complications. The animals generally drank milk within a few hours of the operation and seemed little affected the next day. Sometimes there was an escape of cerebrospinal fluid from the wound.

The author found that polyuria and glycosuria are frequent phenomena which may follow injury or stimulation of any part of the pituitary. He was unable to verify the cachexia said by Cushing to be specific in connection with certain pituitary lesions.

The effects of the operations were controlled by two experiments in which every step of the pituitary operation was performed except actual traumatization of the pituitary. Total extirpation of the pituitary was effectually carried out on six animals. All died within thirty-six hours with slow respiration and coma. No observable changes occurred in the genitalia, nor were any definite changes found in the other endocrine organs. The hyperplasia of the thyroid as described by Cushing was not discovered in any of these cases.

In only two cases was it possible to remove all of the pars anterior. One dog lived thirty-two, the other seventy hours following the operation. Nothing abnormal was observed in the other endocrine organs after operation. In the five experiments in which partial removal of the pars anterior was accomplished, variable results were obtained. In three of the five cases the uterus and ovaries were definitely atrophied. The whole ovary shrinks in size, the graafian follicles degenerate, the primordial ova become opaque and lose their chromatin fibers, the interstitial cells vanish and the stroma becomes fibrous.

One experiment each was performed for the total and partial removal of the pars posterior. No lesions of the endocrine or sex glands were noted in either case. Combined partial anterior and posterior lobe removals were performed in two cases. No changes occurred in either of these animals. Clamping and separation of the stalk probably produced identical results. Of the three dogs on whom these operations were done, two assumed a condition of distrophia adiposo-genitalis. The changes in the adipose and glandular tissues were quite typical of the clinical picture in human beings.

Three experiments were performed to place an imitation tumor in the cella turcica. One dog was killed immediately after the operation because it seemed to be suffering intense pain, one animal had considerable emaciation and slight glycosuria; other complicating conditions made it extremely doubtful if the tumor had anything to do with the condition.

Before summing up his own conclusions, the author discusses at length the results of his own experiments compared to the results obtained by other investigators. His own conclusions follow verbatim:

1. The pituitary body is an organ that is essential to life; its removal causes death within a few hours. In the cases which survive for longer periods, the removal has probably not been complete.

2. The removal of very large portions of the pars anterior is incompatible with life. It appears certain from the evidence at disposal that it is the loss of this portion of the organ which proves fatal when total extirpation of the pituitary is practised.

3. Partial removal of the pars anterior may, if sufficient quantity be removed, cause genital atrophy. This may occur in the absence of any other symptom, although the animal may also remain undersized.

4. Neither partial nor complete removal of the pars posterior causes any symptom. The genital

organs remain normal after operation, and young animals continue to develop. Hence the secretion of the pars nervosa is neither necessarily beneficial nor essential to life.

5. Partial removal of the partes anterior and posterior causes no symptom, provided only a small portion of the pars anterior be removed.

6. Clamping and separation of the infundibular stalk, by interfering with the blood supply and so causing degeneration in the cells of the partes anterior and intermedia, lead to the condition known as dystrophia adiposo-genitalis.

7. Artificial tumours in the neighborhood of the cella turcica may produce irritation, which is accompanied by glycosuria and emaciation; or by interfering with the blood supply may lead to degenerative changes in the cells of the pars anterior, and so give rise to the syndrome dystrophia adiposogenitalis.

8. The pituitary body appears to be one organ and not two; and the essential and beneficial secretion is taken up by the blood stream, as in the case of other organs of internal secretion.

ELLIS FISCHEL.

NECK

Kahn, L., and Graves, S.: Hygroma Colli. *Ann. Surg.*, Phila., 1918, lxvii, 71.

The authors state that hygroma colli is relatively rare. A careful collective investigation of international literature was made by Dowd in 1913. Since then 5 other cases have been reported. An additional case is reported by the authors. The cyst was completely excised, and the pathological report was that of a multiple hygroma colli.

These multilocular, serous, cervical cysts in children are probably due to distention of embryonic sequestrations of lymphatic tissue. They are usually lined with endothelium, and have the power of persistent irregular growth. Trauma, in some cases at least, seems to be a decided factor in stimulating this growth. Their inherent power of development is sufficient to force themselves into surrounding structures.

In multilocular hygroma the serum in one compartment may be clear, while in an adjacent one it may be tinged with hæmoglobin. After birth the growth may show a capricious enlargement with no tendency toward spontaneous recovery. The aggregation of cysts, although presenting superficially, originates from the deep cervical fascia and most often appears in the posterior triangle of the neck. In the submaxillary region its clinical differentiation from branchial cyst is not always easy.

According to Murphy, after partial removal the tumor has returned with enormous increase in size and secretion. This assertion, together with Bloodgood's observation of late malignant development, indicates that the proper treatment of cystic hygromata is early, clean and complete removal.

E. C. Roos.

Forman, J., and Warren, J. H.: The So-Called "Mixed Tumors" of the Salivary Glands. *Ann. Surg*, Phila., 1918, lxvii, 67.

The authors have studied seven cases of the so-called "mixed tumors" of the salivary glands, and they offer a possible explanation of the relationship of the parenchyma cells to the stroma cells. It is generally agreed that these tumors take their origin in fœtal misplacements. They contain elements whose origin has been assigned either to ectoderm, to mesoderm, or to a combination of both of these germ layers.

Four of the specimens occurred in the parotid and three in the submaxillary gland. In gross appearance, the specimens fall readily into four groups:

1. A group of very fibrous tumors with no mucoid degeneration or cartilage formation.

2. A group of very hard, dense tumors with large amounts of cartilage and very little fibrous tissue or parenchyma.

3. A group of very soft, very cellular tumors with trabeculæ of transparent mucous tissue running in and surrounding the areas of the parenchyma which are yellowish in color and opaque in appearance.

4. Tumors closely resembling carcinomata.

Injury does not appear to be an important factor in the development of these tumors. Metastasis appears rare, while local recurrence is not infrequent.

From the various quotations and writings of others it is apparent that the difficulty in assigning an origin to these tumors is in the behavior of the so-called parenchyma cells.

The authors take into consideration that the derivation of some of the head cartilages can be ascribed to epithelium. They are of the opinion that there is a possibility if not a probability that there is in the head and branchial region of the human embryo mesenchyme which has been derived from ectoderm. Later this may differentiate into cartilage and possibly into other derivatives generally assigned to mesenchyme derived from endoderm. The inclusion or misplacement of this ectodermal mesenchyme gives rise to the so-called "mixed tumors" of the salivary glands. Either the cells fail to differentiate and simulate the cells from which they arose, or they differentiate along the lines they normally do and form connective tissue, cartilage, and sometimes bone. E. C. Roos.

Carter, W. W.: Salivary Calculus. *Laryngoscope*, 1917, xxvii, 881.

The author details a personal case and advises operation through the floor of the mouth unless there is an external fistula or an abscess of the gland.

The technique employed in the author's case was as follows: Morphine, gr. ¼, and atropine, gr. 1/150, was injected hypodermically. The area is cocainized, superficially and deeply. The patient lies on the affected side with the tongue protruded to the opposite side.

The stone is located by bidigital palpation; the patient is directed to push the gland forward and upward by placing the thumb under the angle of the jaw.

The tissues are fixed by means of a pair of forceps and an incision is made down to the stone, which is then grasped with the forceps and removed. Care should be taken not to injure the lingual nerve, the maxillary artery, or the facial artery. The wound should be left open and frequently irrigated.

OTTO M. ROTT.

Denis, W., Aub, J. C., and Minot, A. S.: Blood Sugar in Hyperthyroidism. *Arch. Int. Med.*, 1917, xx, 964.

Since and even before the advent of modern methods for the determination of blood sugar, the spontaneous glycosuria so frequently observed in patients suffering from hyperthyroidism has led several investigators to make studies on blood sugar in this disease. These studies have led to conflicting results. Tachaw and Flesch found an alimentary hyperglycæmia in some cases, but not in others. In 40 cases the latter investigator reported not a single instance of spontaneous hyperglycæmia. On the other hand, Geyelin, from a study of 27 cases of hyperthyroidism, concluded that an unmistakable hyperglycæmia can be demonstrated in 90 per cent of the moderate and severe cases, while even in mild types of the disease an alimentary hyperglycæmia, two hours after 100 gm. of glucose, could frequently be demonstrated.

In view of this lack of uniformity in the results reported, it seemed worth while to the authors to carry out a series of experiments dealing with the effect produced by carbohydrate ingestion on persons suffering from hyperthyroidism. Coincident with these experiments they made observations on the gaseous metabolism of these patients, with the idea of establishing, if possible, some relation between the increase in metabolism found in this condition and the effect produced on the blood sugar level by the ingestion of carbohydrates. From their study the authors draw the following summary:

Fasting hyperglycæmia was of extremely rare occurrence in hyperthyroidism. Alimentary hyperglycæmia following the administration of 100 gm. of glucose and 50 gm. of bread was, however, observed in every case examined.

No relation could be found between the degree of hyperglycæmia and the intensity of glycosuria; neither was it possible to obtain any evidence of a relation between the severity of intoxication, as measured by the percentage increase over normal of the basal metabolism, and the occurrence of hyperglycæmia. In a number of cases it was found, however, that after improvement of the patient's condition by rest or by operation the alimentary hyperglycæmia was of a much lower grade than that induced by the same test meal given before treatment.

In two cases of hypothyroidism no change in the fasting blood sugar level was observed to result from the administration of thyroid extract.

GEORGE E. BEILBY.

Else, J. E.: Surgical Goiter. *Northwest Med.*, 1918, xvii, 16.

Indications for operation upon the thyroid gland may be: (1) cosmetic, (2) mechanical, (3) toxic, and (4) malignant. The cosmetic and malignant types are not considered. The mechanical indications are those due to pressure, as upon the trachea, œsophagus, nerves, and adjacent blood-vessels.

Intrathoracic goiter may consist of: (1) a single enlarged lobe, (2) both lobes, (3) portions of one or both lobes, and (4) a true substernal lobe, a congenital anomaly being an atypical lobe below the isthmus.

Hyperthyroidism may be either functional or organic. The organic may be benign or malignant. Benign hyperthyroidism is of two types: (1) exophthalmic or hyperplastic, or (2) toxic or cardiovascular goiter. The latter pathologically is due to at least three lesions, viz., adenoma, adenomatosis, and regeneration or compensatory hyperplasia. Each of the three is described briefly. Clinically they produce manifestations that are alike and which resemble the symptoms produced by other slowly administered toxic substances. Parenchymatous goiter is described pathologically.

Three case histories are given.

CARL R. STEINKE.

SURGERY OF THE CHEST

CHEST WALL AND BREAST

Crymble, P. T.: Gunshot Wounds of the Chest. *Brit. J. Surg.*, 1918, v, 363.

This article is based upon 211 cases observed during fifteen months in a base hospital in France and twelve months in a similar hospital in England. The most important part of the X-ray examination of the chest is to inspect the two domes or cupolæ of the diaphragm. The right dome cannot be distinguished from the shadow of the liver except when a subphrenic collection of gas is present. The left dome is normally defined by the gastric gas bubble. There is usually a deficient movement of the diaphragm in a perforating wound of the thorax and frequently there is complete immobility. The latter condition is also an accompaniment of lung collapse, being found on the same side as the collapse. If an opaque lung area is present in the supradiaphragmatic area it may prevent observa-

tion of the movements of the diaphragm. If the opacity be due to fluid, the diaphragm may be visible in the lying position. On the left side the presence of a stomach gas bubble will enable one to note the position and movement of the diaphragm where the left lung area is opaque.

The defective movement of the diaphragm can be looked upon as a protective reflex fixation in those cases where the lung area above is clear.

If, however, fluid in the pleural cavity or a wound of the lung is present or the bronchi are obstructed, the diaphragm is drawn upward during inspiration and the mediastinum drawn toward the affected side. This is best seen in lung collapse and in hæmothorax.

Adhesions between the costal and diaphragmatic pleura, or between the visceral and diaphragmatic pleura, will cause permanent defective movement and marked alteration in the shape of the cupola during inspiration. Marked elevation of the right cupola was noticed in a case of subphrenic abscess where a large quantity of gas accumulated between the liver and the diaphragm, and again in a case of injury to the right phrenic nerve. Marked elevation of the left cupola was noted in left lung collapse and could be detected both radiographically and by percussion by the abnormally high position of the stomach and colon gas bubbles.

Localization of metallic foreign bodies is best carried out by anteroposterior and lateral fluoroscopic views and then taking stereoscopic plates with the foreign body as near the plate as possible. The entire examination is made with the patient in the lying position, and a skin-mark is made over the most adjacent portion of rib. In taking the plates, the patient is instructed to hold his breath, and an exposure of ten to fifteen seconds, without an accelerator screen, is usually sufficient. A much longer exposure will be required in the presence of a hæmothorax.

Crymble differs with those who advocate non-interference unless the foreign body is in the pleural cavity and giving rise to symptoms. His own experience based on ten cases is that the removal of these intrathoracic metallic foreign bodies can be readily done and does not influence the convalescence unfavorably.

Two inches of rib are resected, the pleural cavity opened, if necessary the lung incised, and the missile located by palpation. In the presence of adhesions no pneumothorax will take place; otherwise, the palpating finger will fairly efficiently block the pleura opening. Foreign bodies in the lung are easily palpated, and the intervening lung tissue is often friable, so that the finger can accomplish the loosening of the metal fragment, and forceps can extract it. After the removal has been accomplished, one closes the pleural opening and tightly sutures the overlying muscles and skin so as to prevent any communication with the outside air. The wound of the lung appears to close rapidly, and the air is ultimately absorbed from the pleural cavity.

When possible the patient should be examined both in the lying and sitting positions, with the rays passing dorso-ventrally, and the apparatus should be capable of giving a satisfactory result with a plate exposure of five seconds with an accelerator screen. Stereoscopic plates are almost indispensable for a proper study of injuries of the thorax.

A very large quantity of fluid will render the whole of one lung area opaque, while a small collection will produce a supradiaphragmatic opacity in the sitting position. In the lying position, fluid disseminates itself through the pleural cavity, and produces a moderate opacity of the whole lung area. The nature of the pleural fluid cannot be determined radiographically.

Gas in the pleural cavity, associated with retraction of the lung from the lateral thoracic wall, is revealed by the presence of an opaque line produced by the lateral margin of the collapsed lung, and even quite small collections of gas may disclose themselves in this way. Where, however, owing to fresh or old adhesions between the lung and the lateral thoracic wall, lateral collapse of the lung cannot take place, the gas tends to collect in front of the lung, and fails to alter the appearance of the lung area. In one case, a large pneumothorax was not recognized at the X-ray examination, but was subsequently revealed by exploratory puncture and confirmed by postmortem examination.

Traumatic infarct of the lung is the condition produced by contusion or laceration, and it gives rise to an opacity of the lung area involved.

Gas and fluid in the pleural cavity give rise, in the sitting position, to a very characteristic picture, since a sharp horizontal line marks the junction of the opaque fluid with the transparent gas. During screen examination this gas-fluid junction may show waves, bubbles, or splashings. When the lower part of the lung is involved, some difficulty may be experienced in distinguishing a traumatic infarct from a small hæmothorax, and frequently the latter condition accompanies the former.

Pneumonia gives rise to an opacity of the lung area involved with no displacement of the heart.

Pasteur (*Brit. J. Surg.*, 1914, i, 587) was the first to describe this condition in association with diphtheria and as a sequel to abdominal operations. Bradford (*Brit. J. Surg.*, iii, 247 and *Brit. M. J.*, 1917, Aug. 4) has pointed out the frequency with which this condition accompanies gunshot wounds of the chest, and was the first to suggest massive collapse as the explanation of certain puzzling radiograms, the outstanding feature of which is opacity of the lung area with retraction of the heart toward the opaque side.

In ten of Crymble's fifteen cases of massive collapse of the lung, the condition was found on the side opposite to that injured, and in five it was present on the same side as the injury. It shows as an opacity associated with a high and immobile diaphragm, the mediastinum being retracted toward

the opacity. The latter disappears in one to two weeks. Collapse as a rule affects only the left lower lobe, but in one case the entire lung was involved and in another only the apex.

A brief summary is given of the X-ray and physical findings in the various conditions resulting from injury to the chest. Altogether this article upon the X-ray findings is the best which has thus far appeared, and a study of the excellent radiograms accompanying the details of each case can be warmly recommended. D. N. EISENDRATH.

Rees, W. A., and Hughes, G. S.: Wounds of the Chest as Seen at an Advanced Operating Center. *Lancet*, Lond., 1918, cxciv, 55.

The figures and analyses in this paper are based on 140 consecutive cases of uncomplicated chest wounds seen early after injury, during a comparatively quiet period of six months. The wounds are classified as "closed" in case the wound is small or valvular preventing air passing in and out with the movements of respiration, and "leaking" in case air or bubbles escape from the wound on respiration, when the patient coughs, or is rolled over. The earlier the patient is seen, the larger will be the proportion of "leaking" to closed cases, since many wounds close spontaneously in the first twenty-four hours.

Primary hæmorrhage into the pleural cavity is common to both. It is the chief cause of death during the first few hours after receipt of a wound of the chest. When severe, the patient is blanched and very restless. In the worst cases morphia may fail to control restlessness because the drug is not absorbed by the failing circulation. In 12 fatal cases 9 were pulseless on admission, in the other 3 the pulse rate was between 130 and 140. There were 7 other fatal cases of primary hæmorrhage complicated by other injuries.

Treatment in these serious cases is mainly expectant. Patients with a readily perceptible pulse may die suddenly if rolled over on the sound side within twelve hours after being wounded. Bleeding does not usually continue after twenty-four hours.

It usually comes from the deeper blood-vessels in the lung. Nature's method of arresting it is to cause collapse of the lung. The pressure on the lung by the accumulated fluid in the pleural cavity will not by itself assist much in the arrest of the hæmorrhage. No single case of hæmorrhage from an intercostal artery has been seen. Plugging of the wound is therefore of no benefit except after the lung is collapsed, when it may improve respiration by rendering the entrance of air into the chest easier by respiratory passages than through the wound.

Hæmoptysis was present in 65 of 100 cases of undoubted penetrating wounds of the lung. In no case was it severe enough to cause anxiety.

Leaking pneumothorax was present in 44 cases with a mortality of 61 per cent. Excluding 18 fatal cases that died early, there were left 26 who lived long enough for the pleura to become grossly infected. Of these, 15 became septic and 9 died. The proportion of leaking pneumohæmothorax which became infected was then 57 per cent, five times the proportion in closed hæmothorax. The question of sepsis is therefore a very important one and is dependent on the size of the opening in the pleura. Any wound which leaks air or blood and pleural fluid freely after forty-eight hours will become septic. Convalescence and invalidism is also greatly prolonged.

Treatment of these leaking cases is by simple dressing, by plugging the wound, or by sewing up the wound with or without removal of foreign bodies. The simple dressing is sufficient in case of small wounds. Air will cease to leak in twenty-four to forty-eight hours. If it continues or if the discharge persists, sepsis is almost certainly present and resection and drainage is indicated.

Plugging the wound is done to arrest hæmorrhage and to prevent the entrance of germ-laden air. It is, however, difficult to render a large wound airtight with gauze and there is danger of introducing germs from the edge of the wound.

Sewing up of the wound is advisable in all cases, since by this means infection can be prevented in more than half the cases. The removal of foreign bodies from the lung is justifiable only in selected cases. About twelve hours after being wounded is perhaps the best time for suture. Shock should have passed off and hæmorrhage ceased before operation. Chloroform and warmed oxygen is the most suitable anæsthetic following morphia and atropin. The suturing takes only a few minutes. Muscle and pleura are sutured with catgut, the last stitch being drawn tight during expiration, and the skin with silkworm gut. If the pleural contents are infected the wound will become moist in forty-eight hours. The stitches are then removed and a tube inserted. In general these cases are bad operative risks and operations should be as speedy and simple as possible. Nothing is gained by sewing up holes or tears in the lung.

Only those cases of closed hæmothorax giving rise to physical signs and proven by the syringe are included in this series. Closed hæmopneumothorax differs in no way from hæmothorax except in greater liability to increased intrathoracic pressure and cardiac displacement. Air in these cases comes from the lung. There were 72 cases of hæmothorax and closed hæmopneumothorax, with a mortality of 19.3 per cent. Of the fatal cases, 5 died from internal hæmorrhage. Of the 67 that survived 48 hours only, 11.9 per cent died from this cause.

The average stay of the hæmothorax cases at the advanced station was seven days. The three patients who recovered following rib resection showed signs of infection on the fifth, tenth and thirteenth days, respectively. Rapid pulse, sustained temperature and localized pain in the chest are signs of infection of hæmothorax. Chest cases should be examined every day, especial attention being directed to the position of cardiac impulse. Aspiration should be

performed when there is cardiac displacement of one inch or more. All the fluid that will run off easily is removed slowly at the rate of about an ounce per minute. Practically all hæmopneumothorax cases require aspiration.

Of miscellaneous complications, collapse of the wounded lung, pleurisy, secondary hæmorrhage from the lung following sepsis, and cardiac complications are mentioned.

Collapse of the lung is most marked in cases of pneumohæmothorax or very large effusions. It is one of nature's most potent methods of arresting hæmorrhage. Massive collapse will occur also in the wounded side when there is very little hæmothorax and no raised intrathoracic pressure. It also is fairly common on the side not wounded. Two factors assisting in this are cessation of movement of the diaphragm and a blood clot completely blocking a bronchus. In these cases the apex beat is pulled over to the side of collapse, the diaphragm is raised, the affected side is immobile, and the respiration is increased greatly on exertion. C. A. HEDBLOM.

Carpi, U.: Treatment of Penetrating Thoracic Wounds (Ferite penetranti del torace e loro cura). *Policlin.*, Roma, 1917, xxiv, *sez. prat.*, 1432.

The author treated 137 cases of penetrating chest wounds. The mortality was 28.4 per cent. He gives the following statistics:

Nine, or 6.5 per cent died as a result of thoracic lesions. Thirty, or 21.8 per cent died from thoracic lesions complicated with lesions of other organs.

These figures show the interesting fact that only 6.5 per cent of the mortality resulted from simple thoracic lesions. The author states that his figures compare favorably with the statistics of other contemporary surgeons, as for instance, Remond and Glénard, who give a mortality of 5.45 per cent; Gulekes, 5.33 per cent; others give a higher rate: viz., Tillage, 9.6 per cent; Rotter, 12.12 per cent; l'Auge, 19 per cent; Maissonnet, 20 per cent; Lemaitre, 19 per cent; Morelli, 25 per cent; and Bastianelli, 24 per cent.

The author discusses the symptomatology of the wounds. As regards treatment, he thinks that the removal of all blood clots in the pleura and the employment of artificial pneumothorax following the Forlanini method is the only treatment which assures definite repair of the wounds and restores the respiratory function in the injured lung.

The maintenance of pneumothorax by the regular technique is the rule in cases in which the projectile is retained in the cavity and presumably in the lung. W. A. BRENNAN.

Pisek, G. R.: Report of a Case of Chylothorax. *Arch. Pediat.*, 1917, xxxiv, 929.

The patient was a full term breast-fed normal baby of nine weeks. There was a history of sudden illness ten days before, followed after a few hours by a convulsion. Rapid breathing was the only other symptom. The attending physician diagnosed pneumonia. The physical examination showed cyanosis, restlessness, a respiration of 60 to 90 per minute; there was no fever. Aspiration over the flat area of the right chest yielded a milky fluid, of which six ounces were withdrawn. The child's color then improved and it took the breast better.

A laboratory examination showed a sterile colloid fluid composed of 3.5 per cent fat and seroglobulins and containing about 12,000 leucocytes per cmm.

Nine ounces of similar fluid were withdrawn five days later, with relief of dyspnœa, etc. A radiogram showed effusion in the right chest, with displacement of the heart to the left. The blood and urine examination was negative.

To prove the character of the fluid, 7½ grams of sudan III were given the baby. Bright red stools followed. Thoracentesis eighteen hours later yielded a pink stained chylous fluid.

The baby became free of symptoms during three weeks' stay in the hospital and gained weight. Aspiration now yielded no fluid.

It is necessary to distinguish between true and pseudo-chylothorax. Both forms are rare. Bargebuhr in 1895 reported 22 true and 19 pseudo cases. Sherman in 1907 tabulated 11 cases under fourteen years. The author believes his case the youngest on record. He considers trauma, new-growths, tuberculosis and thrombi as etiological factors. The convulsion may have been etiological in this case. The mortality in true cases is given at 50 to 75 per cent, in the pseudo form at 40 to 50 per cent. Thoracentesis rather than resection is the best treatment. C. A. HEDBLOM.

Campbell, J.: The Treatment of Septic Hæmothorax and Empyema. *Brit. M. J.*, 1918, i, 109.

Many cases of septic hæmothorax in the early stage can be successfully treated by thoracotomy and careful removal of all fluid and clots, followed by washing out with Dakin's solution and complete closure of the pleural cavity. This treatment, however, is of no avail in half of the severe septic cases, and drainage is followed by long-continued fever and exhausting suppuration. Campbell has found in a number of cases that it is superior to any other for the severely septic cases. An X-ray examination is first made and any foreign body localized.

Under a general anæsthesia the wound is explored, the fractured portions of rib resected, and the wound sewn up if its condition allows. The pleural cavity is then drained in the usual fashion, resecting about three and a half inches of rib as far forward and as low as possible, that is, usually the eighth rib in the mid- or anterior axillary line. Through this opening the cavity is explored, and an easily accessible foreign body and fragments of loose bone lying in the cavity or on the surface of the lung are removed. Blood-clot and fibrin are swabbed out as far as possible, and any septa forming loculi broken down.

The cavity is next washed out with a warm mixture of hydrogen peroxide and eusol, or Dakin's

solution. A rubber tube with an internal diameter of a quarter of an inch, with a large lateral opening a quarter of an inch from one extremity, is then inserted, so that this end lies in the most dependent part of the pleural cavity when the patient is lying on the *normal* side; that is, in the costovertebral recess behind the pericardium. Finally, the wound is loosely sewn up, but no attempt is made to effect an airtight closure around the tube.

When the patient has recovered from the operation, the size of the cavity is estimated by filling it carefully, but usually incompletely, with warmed Dakin's solution, and then emptying it. After this the cavity is filled through the tube every four hours to about one-third of its capacity or less with Dakin's solution. At the end of two hours another long tube is attached to the tube in the chest and the fluid siphoned out, the patient meanwhile lying on the sound side with the chest opening uppermost, or as nearly so as possible. The patient is told to pant or cough slightly at frequent intervals as long as the fluid remains in the chest, and by this means splash the fluid about inside the cavity, and so bathe with it the entire infected surface and any recesses that may exist.

In this way the pleural cavity contains for two hours a large quantity of sodium hypochlorite solution, and is more or less empty for a like time. During the former period the patient lies rigidly on the sound side, without any raising of the shoulders, to prevent escape of the fluid and consequent flooding of the bed; during the latter he is free to lie as he chooses. Thus the patient gets a reasonable amount of rest and comfort and is saved the exhaustion associated with the maintenance of one constant position. In addition, once daily the tube is removed, sterilized, and replaced, and the cavity washed out as in the usual treatment for empyema.

To overcome the disadvantage of injecting cold fluid into the chest, the author has found that it is better to make Dakin's solution of double strength and, prior to filling, to dilute it with an equal quantity of warm sterile water.

D. N. Eisendrath.

Sergent, E., Pruvost, P., and Labro, P.: Functional Disturbances Attributable to a Lesion of the Cardiac Plexus and of the Mediastinal Nerves in Chest Wound Cases (Troubles fonctionnels imputables à la lésion du plexus cardiaque et des nerfs du mediastin chez les blessés de poitrine). *Ann. de méd.*, Par., 1917, v, 473.

In cases of chest wounds, a certain number sooner or later complain of oppression, palpitations, and thoracic pain, even when a complete stethoscopic as well as radioscopic investigation shows the absolute soundness of the heart, pericardium, lungs and pleura.

Some of these cases are exaggerating or shamming, others are nervous or suffering from shock; but all are not. In some a thorough examination makes functional disorders evident by revealing the existence: (1) of symptoms due to a lesion of the cervical sympathetic or of the vagus nerves; (2) of symptoms due to a lesion of the phrenic nerve.

In some cases the projectile has remained in the body of the patient, whose complaints may be verified by the fact that the presence of this projectile can be discovered in the region of the large vessels, at the base of the heart, or in the region of the cardiac plexus.

The author relates ten cases in support of his argument. In five of these hyperthyroidism was observed; in three phrenic neuralgia; in four pupillary irregularity; and in two vasomotor disturbances. In such cases the desirability of extracting a retained projectile must be considered.

W. A. Brennan.

TRACHEA AND LUNGS

Duval, P., and Vaucher, E.: War Wounds of the Lung (Les plaies de guerre du poumon). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2243.

The authors report 161 cases of lung wounds. The mortality was 16.7 per cent. These include all cases, even those arriving dead at the station, and cases where death resulted from other than the pulmonary wound.

The mortality in 29 cases where an urgent operation was done for hæmorrhage or an open thorax was 44.8 per cent.

Deducting these 29 and 13 dying without any operation from the 161 cases leaves 119 cases. Of these, 17 were operated upon for the extraction of projectiles or for direct treatment of the lung wound. All others were treated medically. Duval therefore has only operated on 28.5 per cent of ordinary lung wounds. The 17 operated cases all resulted in recovery. Of the 101 cases medically treated, there was 1 death from pleural infection and 10 other cases of pleural infection which recovered.

The operative indications in lung wounds are both general and particular, according to the given case. Duval thinks that projectile wounds of the lung are not different in their general aspect and progress from other projectile wounds. Anatomically, bacteriologically, and clinically, such lesions are the same, and it is logical to treat the lung as any other damaged tissue: remove the foreign bodies, excise the contused tissues, and primarily suture the aseptic wound.

Apart from their general indications there are particular indications in given cases. Such are: (1) the presence of a thoracic parietal fracture; (2) a large projectile included in the lung; (3) pulmonary hæmatoma; (4) the co-existence of other wounds in the thorax or abdomen. The authors discuss each of these types.

In the operative technique every effort ought to tend towards the complete treatment of the wound of the lung. Every postoperative septic complication observed by the authors was due to the

fact that the lung lesion was insufficiently treated. Small bone or other fragments were found in the pus.

With regard to the most opportune time for operating, a lung wound, like any other wound, is best operated upon before it becomes infected or before the infection has spread to the pleura. The best time is usually within the first twelve hours if the general condition is good.

The 17 operated cases which recovered included 12 perfect recoveries and 5 cases with septic complications.

Duval favors the present-day treatment of war wounds of the lungs by early surgery. Lung wounds should be treated according to the same general and local principles as apply to every other war wound.

W. A. BRENNAN.

Tanton and Others: Surgical Treatment of Lung Wounds (Traitement chirurgical des plaies de guerre du poumon). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2235.

In submitting statistics of Tanton and others regarding the surgical treatment of open thoracic wounds, Duval points out that closure of the thorax is only a palliative procedure which obviates threatening asphyxia. It transforms an open thorax into a closed thorax, but leaves the lung and pleura exposed to all the dangers of wounds of these organs.

Thevenot's mortality for thoracic closure is 24 per cent, the same as for non-operated shell wounds of the lung. The statistics now submitted again demonstrate these facts and show that closure of the thorax, in itself an excellent procedure, should be supplemented immediately or as soon as possible by an operation on the lung wound similar to that usually undertaken for uncomplicated war wounds of the lung.

W. A. BRENNAN.

McMahon, F. B., and Carman, R. D.: The Roentgenologic Diagnosis of Primary Carcinoma of the Lung. *Am. J. M. Sc.*, 1918, clv, 34.

The author describes in detail the pathologic, symptomatic, physical and roentgen findings of various types of primary carcinoma of the lungs. The chief roentgen characteristics of the infiltrative types are described as areas of increased density along the roots of the larger bronchi. These are wedge-shaped, with the apex pointing toward the hilus, and the base not reaching the periphery until late in the disease. Their outlines are usually hazy. In the miliary type there are innumerable small areas of increased density extending throughout all the lobes. Their borders are poorly defined from the surrounding parenchyma of the lung. The mixed type includes a combination of the infiltrative and miliary forms.

The differential diagnosis from bronchiectasis, pulmonary abscess, encysted empyema, lobar pneumonia, syphilis, primary sarcoma and lymphosarcoma, Hodgkin's disease, actinomycosis, cysts, fibromyxoma, tuberculosis, pneumoconiosis, chronic passive congestion, simple chronic pleuritis, pleural transudates and exudates, and metastatic malignancies of the lungs, is outlined. Histories with roentgenograms of five cases are given, three of which were verified by autopsies and one by operative findings.

The authors arrive at the following conclusions:

1. There are three main types of primary carcinoma of the lungs which present characteristic gross pathological appearances: the infiltrative, the miliary, and the mixed.

2. The roentgen examination and the stereoscopic study of roentgenograms will early point to a pulmonary lesion and its probable nature.

3. The areas of increased density found in primary pulmonary carcinoma are usually quite typical, and can be differentiated from areas of increased density caused by other diseases in the thorax, including inflammatory changes and neoplasms, both primary and metastatic.

4. A careful correlation of the roentgen findings with the clinical history and the physical and laboratory findings usually makes a clinical and differential diagnosis possible.

ADOLPH HARTUNG.

Black, H. R., and Black, S. O.: Pulmonary Teratoma. *Ann. Surg.*, Phila., 1918, lxvii, 73.

The patient was a white male of 46 years, with an essentially negative family and past history. His chief complaint was persistent soreness through the left chest, an occasional cough and some dyspnœa, which he attributed to trauma ten months previous.

Physical examination showed a slightly diminished respiratory excursion and vocal resonance on the left side. There was dullness and absent breath sounds from the fifth to the eighth interspaces posteriorly.

Aspiration in the sixth interspace posteriorly yielded 30 ccm. of blood tinged yellow with serum. Smears and cultures showed no micro-organisms. A radiogram showed a large round shadow in the left lung. A later plate showed an increase in the size of the shadow.

Under ether anæsthesia a quadrangular flap including the sixth to the eighth ribs was turned back over the vertebral column. Thickened, bulging, pulsating pleura seemed adherent to the lung. Cautery puncture yielded a yellowish serum. The finger barely reached the anterior wall of the cavity. The patient left the hospital after one month much improved, but the wound still drained. After a few weeks it increased and became foul. Slight fever, cough and pain continued with progressive weakness. About four months after operation he had three definite attacks of hæmoptysis, in the last of which he died.

Sections of tissue removed at operation and again after death were diagnosed by Coplin of Jefferson Medical College as pulmonary teratoma. There were also a few carcinomatous cells.

Teratomata are commonly solid neoplasms. Dermoids practically always are cystic. They

spring either from embryonic cutaneous inclusions or from the growth of a misplaced and blighted ovum. When not congenital they develop from nests of epithelial cells which are carried into the deeper tissues during the inception of a punctured wound. Both these tumors may be classified therefore as being congenital or acquired in point of origin, and as being external or internal in point of location. Examples of external teratomata are the Siamese twins, polydactylism, spina bifida, etc. Internal teratomata are far more frequent and are the types usually designated by the term.

Dermoids are distinctly more common than both types of teratomata combined. They are made up largely of dermal tissue plus one or more of its appendages, while teratomata are tumors of a peculiar mixed histologic composition and are described by some as containing tissues, organs, or systems of organs, derived from two or all of the germ layers. Dermoids are spoken of as structures of slight complexity and teratomata as structures of great complexity. The ovary testicle, sacrococcygeal region, and mediastinum, in the order named, are the most frequent sites of these tumors.

Hare's analysis in 1888 of 520 cases of mediastinal tumors included 8 dermoids and one unquestionable teratoma. Christian in 1907 analyzed 70 cases, 7 of which were teratomata, the remainder dermoids.

Bland-Sutton observes that these tumors in the mediastinum originate from cutaneous or subcutaneous inclusions of cells, with their subsequent dislocation backward, during the process of folding together of the two halves of the body during early intra-uterine life. These cells may manifest themselves later in life as tumors of the sternum or much more frequently settle in the anterior mediastinum where they may involve the pleura or pericardium. They originate, therefore, not in the lung itself but in the mediastinum. Once in the lung, infection by germ-laden air may lead to suppuration.

Surgical interference is indicated only when circulation or respiration is seriously impaired. Excision *in toto* has been successfully accomplished in only one case. C. A. HEDBLOM.

Van Reeth, P., Voncken, J., and Stassen, M.: Strangulated Pulmonary Hernia (Hernie pulmonaire étranglée). *Arch. méd. belges*, 1917, lxx, 1142.

In their war practice the authors met a case of strangulated pulmonary hernia. Operation showed that a bullet had passed tangentially over the sixth and seventh ribs which were fractured in the mammary line. The costal breach was hidden by a pulmonary lobule about the size of a pigeon's egg, a true pulmonary hernia. It was compressed between the sixth and seventh ribs. The herniated lung tissue was violet in color. Blood squirted at every respiratory movement.

The herniated lobule was seized by a compress soaked in warm salt solution, cautiously freed and reduced into the pleural cavity. Resection of the fractured ribs was then done. The pleural cavity was cleared of accumulated blood. The freed lung lobule was carefully examined and cleaned; and since its general condition was found good, they decided to save it. The pleura was very ecchymotic. The whole region was cleansed of blood clots, the pleural cavity washed out with salt solution, intercostal vessels ligatured and the wound closed. A liter of salt solution was administered at the end of the operation. For two days after operation the patient's condition was critical, but the general state then began to improve; cyanosis and dyspnœa diminished. Three months after operation he left the hospital cured.

The authors discuss the occurrence, symptomatology, and treatment of pulmonary hernia. Although the condition is said to be rare, they think it may occur more frequently than is believed, since it has been the general practice until recently not to intervene surgically in lung lesions. When the cutaneous wound is large, an existing hernia is easily apparent; but when the skin wound is small, a pulmonary hernia through the ribs may pass undetected.

As a means to detect the existence of a lung hernia, the authors state : (1) that in the neighborhood of the wound there is often found a small resistant crepitant swelling, a localized emphysema. If such is found, it suggests pulmonary hernia, especially if the patient complains of sharp pains at this point; (2) such patients show convulsive and painful dyspnœa; (3) pulmonary hernia must be considered when the traumatic orifices are situated in the soft parts of the thorax. In cases of doubt, a small incision of the part under local anæsthesia will discover the lesion.

A pulmonary hernia, if not operated upon, is extremely liable to become gangrenous and a fatal issue may be expected from pleural empyema or infectious pneumonia. W. A. BRENNAN.

HEART AND VASCULAR SYSTEM

Levine, S. A., and Tranter, C. L.: Infarction of the Heart Simulating Acute Surgical Abdominal Conditions. *Am. J. M. Sc.*, 1918, clv, 57.

The authors present two cases which gave the history and presented the signs of an acute inflammatory or perforative lesion of the upper abdomen, but proved to have coronary thrombosis with infarction of the heart. The cases were strikingly similar in their history, clinical course, physical findings, and necropsy examination.

Both patients entered the hospital complaining of acute epigastric pain of a few days' duration in one case and of a few hours' duration in the other. Both had slight nausea and some vomiting, but neither had chills nor fever. Their past histories were essentially negative except for antecedent angina in one.

Physical examination showed marked tenderness

in the epigastrium in each case and a questionable mass in the region of the gall-bladder, over which the percussion note was dull. The pulses were of poor quality, slightly rapid, and the heart sounds were feeble. In neither case were cardiac murmurs heard, the apex beat was neither seen nor felt, and cardiac dullness was slightly increased in the second case. One case developed complete heart-block shortly before death.

The blood-pressure in both cases was low; the pulse-pressure in the first case was only 12 and in the second 26. There were anomalous signs in the right lower chest in both instances, consisting of a moderate number of râles at one time and subsequently a diminution of the breath sounds throughout both lungs.

The acute epigastric pain and tenderness, together with a leucocytosis of about 20,000 and a moderate fever in both cases, made the diagnosis of an acute inflammatory or perforative lesion of the upper abdomen seem probable. The conditions considered were perforated gastric ulcer, acute pancreatitis, and acute gall-bladder disease.

A laparotomy with negative findings was performed in the first case. The mild diabetes with acidosis in the second case, together with the drowsiness, influenced the surgeons to consider that the patient might be on the verge of coma, and dissuaded them from operation.

The condition above described bears a close relation to angina abdominalis and angina pectoris. Allbutt points out as distinguishing features of coronary embolism from the angina pectoris of the ordinary form the flutter and lability of the heart, the rapid, irregular, and failing pulse, the waning sounds, the dyspnœa, and the cyanosis. He, as well as Hochhaus, Obrastzow and Streschesko, refers to the fact that the pain in infarction of the heart is more continuous than in typical angina.

P. G. Skillern, Jr.

SURGERY OF THE ABDOMEN

ABDOMINAL WALL AND PERITONEUM

Delbet, P.: Toxic Phenomena in Peritonitis and Shock (Les phénomènes toxiques dans les péritonites et dans le choc). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2113.

Delbet refers to experiments made by him as far back as 1892, as well as recent ones to produce peritonitis in dogs by perforation, collecting the peritoneal exudate and injecting it into other dogs.

He has found that when an animal is injected with the serous exudate of peritonitis, whether the exudate is pure or filtrated through Arsonval's apparatus by which the microbes are completely or partially removed, the result in each case is the same, i.e., symptoms of inflammation of the peritoneum. There are only two hypotheses possible; the action is due either to serous irritation or to an intoxication.

The injection of irritants into the peritoneum does not produce vomiting; injection of serous exudate does produce vomiting within half an hour after injection. Delbet thinks that the vomiting and peritoneal spasm are not due to a reflex consecutive to irritation of the peritoneum, but to an intoxication. The death of the animals within three to four hours after injection points also to intoxication. Delbet thinks that the classic symptoms of peritonitis are above all of toxic origin, and due to the resorption of the toxins produced by the development of microbes in a particular area. Hence such symptoms are inconstant, and the so-called classic symptoms, spasm, vomiting and constipation, may all be simultaneously absent. There is one valuable symptom, however, which is never absent, namely, limitation of the motion of the diaphragm. It is very valuable because it is produced before the infection has become generalized and shows the extension of the peritonitis. There is always a possibility of saving a patient if intervention is made within a short time of the appearance of this symptom.

Delbet finally shows that in the final phases of fatal peritonitis the symptoms are those observed in the wounded in a state of shock. They are due to an intoxication of the nervous system, more especially the bulb and the sympathetic. This leads Delbet to ask if intoxication does not play a part in some forms of shock. He thinks it does, and others have arrived at the same conclusion. The practical application of the theory of the autotoxic origin of shock would indicate immediate amputation in certain cases irrespective of the state of shock.

W. A. Brennan.

De Neen, D. D.: An Experimental Study of Peritonitis with Reference to Calcium Sulphide and Special Reference to Iodine and Ether in Its Treatment. *Am. J. Surg.*, 1917, xxxi, 317.

A series of experiments was made on peritonitis in dogs in order to see whether ether will kill bacteria within the abdominal cavity, and also to learn whether or not it is advisable to close an abdomen without drainage, when large numbers of bacteria are left within the abdominal cavity after an operation.

Calcium sulphide was also used for the same purpose. It was noted that an aqueous solution of calcium sulphide would dissolve dry blood, and the point arose as to whether or not it would prevent or dissolve abdominal adhesions.

Iodine was used in the abdominal cavity, in

some experiments equal parts of tincture of iodine and alcohol, and in others one part of tincture of iodine to ten parts of sterile water.

The author draws the following conclusions:

1. Calcium sulphide has no value as an antiseptic and did not prevent adhesions in these experiments.
2. Ether has no value as an antiseptic in the prevention or treatment of local or general peritonitis.
3. Ether will cause respiratory paralysis when used in large quantities within the abdomen.
4. Ether is irritating and will cause adhesions when used upon the normal peritoneum.
5. Ether aids rather than inhibits infection in the peritoneal cavity.
6. Tincture of iodine and alcohol, equal parts, proved to be extremely irritating and harmful.
7. Tincture of iodine causes adhesions when applied to the peritoneum.
8. Tincture of iodine and water did not prevent peritonitis.
9. Drainage is preferable to calcium sulphide, ether or iodine in the treatment of peritonitis.
10. The peritoneum protects the system against bacteria. C. A. BOWERS.

Fobes, J. H.: Hernia Through the Anterior Abdominal Wall in Women. *Internat. J. Surg.*, 1918, xxxi, 11.

Excluding femoral and inguinal herniæ, the author divides these cases according to frequency into: umbilical, ventral ordinary, ventral post-incisional, ventral post-traumatic, epigastric, and ventral accompanied with procidentia.

A brief résumé of embryological anatomy emphasizing the importance of Richet's fascia is noted in the umbilical type. Infants are treated by the button mould or coin adhesive truss, others by the Mayo plan of overlapping closure. The results of the latter are uniformly successful.

Ventral ordinary type herniæ are noted below the umbilicus, involve wide diastasis of the recti muscles, and therefore present a sac with a neck of large diameter. Strangulation is infrequent. Operative treatment consists in a Pfannenstiel type of incision through sheaths of recti, reduction of the sac, overlapping of the recti muscles from side to side, and overlapping of the fascia from above downward. A case is reported from the service of the Metropolitan Hospital, New York City, with a failure from a previous operation of the Morison type, presenting also an inguinal diverticulum of the sac. A cure still present after two years was obtained by closing the inguinal canal from within and performing the operation described above.

Postincisional ventral herniæ require for their cure wide, elliptical incisions entering the peritoneal cavity through healthy tissue, the removal of diseased contents, and repair by overlapping of fascia.

The author notes a rare case of true traumatic hernia. The patient received a severe blow in the abdomen below the umbilicus from a plank. Signs of hernia were present. Incision revealed a complete tear of the right rectus muscle and sheath and a protrusion of the peritoneum containing intestines and omentum. The muscle was sutured at right angles to the tear and the sheath overlapped in the customary manner. Examination six months later showed a cure.

The last case reported is one of procidentia uteri and ventral hernia. Through the transverse incision the abdomen was opened, the uterus split, the endometrium curetted away, the two portions of the uterus sutured to the under surface of the recti with linen thread passed up through the rectus sheath, and the peritoneum closed about the cervix. The recti were then overlapped from side to side and the recti sheath overlapped from above downward. Two months later both procidentia and hernia were relieved.

Erdman, S.: Inguinal Hernia in the Male. *Ann. Surg.*, Phila., 1917, lxvi, 702.

The author reports the results of the post-operative observations in 148 cases of inguinal hernia extending over periods of eight to eighteen months. Of these cases, 102 were indirect and 46 direct.

There was no instance of a direct hernia on one side with an oblique one on the opposite side. Of the indirect cases, 40 per cent showed early tumefactions in the scrotum and 22.5 per cent of these were persistent. These included hydroceles, thrombosed veins, distended veins, tunica thickenings, hæmatomata, indurations of the cord and indurations of the testis. In the direct cases only 15.2 per cent showed early tumefactions and 8.7 per cent were persistent.

There were nine recurrences in the series, two being in the oblique cases and seven in the direct. Atrophy of the testicle occurred twice, and there were two deaths, one due to pulmonary embolism on the eleventh day and the other due to pneumonia on the twenty-third day.

From an analysis of these cases, it seems that a persistent hydrocele is a common and important after-result, there being 20 hydroceles in 148 cases. The author believes that direct herniæ are acquired and not associated with hydrocele, while oblique herniæ are usually developmental, more often right-sided, and often associated with hydrocele of the cord and of the tunica. GATEWOOD.

Symonds, C. P.: A Case of Traumatic Hernia of the Diaphragm Proving Fatal Seven Months After the Wound. *J. Roy. Army M. Corps*, Lond., 1917, xxix, 34.

In the case reported, a man was wounded by a bullet which entered over the left scapula. The bullet was removed and the man left the hospital. Later he developed sharp attacks of abdominal pains, with vomiting, etc., and was again admitted to the hospital. His case after examination was

finally diagnosed from X-ray findings as diaphragmatic hernia.

The man was not operated upon until a later attack occurred and his condition was desperate. He died from shock. The autopsy showed a large circular opening near the center of the left dome of the diaphragm. The stomach, great omentum, transverse colon and part of the small intestine had herniated into the thorax. Spontaneous reduction in all probability occurred until the last attack.

The author thinks that even if the patient had been operated upon when first seen, the size of the diaphragmatic orifice was so large that nothing could have been done to repair it.

W. A. BRENNAN.

GASTRO-INTESTINAL TRACT

Lockwood, G. R.: The Symptomatology of Peptic Ulcer. *N. Y. St. J. Med.*, 1917, xvii, 535.

Lockwood warns against too hasty a diagnosis of peptic ulcer and believes that too much reliance is placed on X-ray and laboratory findings. The X-ray frequently fails to show duodenal ulcers. Gastric analysis of the stomach, both after fasting and after the test meal offers the most valuable information.

Hypersecretion, i.e., more than 30 ccm. of gastric juice repeatedly found, is pathological and signifies motor error. Hyperacidity also depends on motor error. Painful hyperacidity indicates an organic lesion. In the case of ulcer, the nearer the lesion to the pylorus, the higher the acidity.

The chief characteristics of ulcer history are: (1) the regularity with which the symptoms appear at a definite hour after meals; (2) the relief afforded by taking food. Other conditions simulating ulcer have not the clock-like precision of appearance of symptoms.

Observation of the case for a long time, together with a careful history and all laboratory findings checked one against the other, is the only way one can diagnose this condition. I. E. BISHKOW.

Troell, A.: Gastric and Duodenal Ulcers from a Surgical Point of View. *Ann. Surg.*, Phila., 1917, lxvi, 664.

Troell found in the series studied by him that 76 per cent of 234 gastric and duodenal ulcers were located in the stomach and 24 per cent in the duodenum; 5 per cent of the cases had multiple ulcers.

The time of the appearance of pain gave no definite differential point between duodenal and gastric ulcer. The total acidity was relatively high, i.e., 53, but hyp- and anacidity occurred in both types. The average acidity was lower for cases with residue than for those without, i.e., 40.

The X-ray is more reliable than the motor meal in investigating gastric motility. Ulcer may exist for a time at least and be absolutely painless. Two-thirds of the ulcers relieved by food intake were in the stomach, and 15 per cent of all cases experienced a relief of pain on vomiting. Pain during defecation is due to perigastric adhesions. Twenty-two stomach and 5 duodenal cases had periodic diarrhœa alternating with constipation.

At laparotomy it is impossible to determine by palpation the presence of an ulcer. X-ray is again of importance in directly demonstrating ulcer, especially on the lesser curvature by the "niche." Tenderness over such a niche in the duodenum, gas high in the duodenum, and rapid stomach emptying are valuable signs of ulcer in this section. Radical operative methods are replacing the conservative.

The author carefully analyzes and groups the 234 cases studied according to various operative methods and their results. Resection plus gastro-enterostomy gave better results with fewer necessary secondary operations. K. L. VEHE.

Morse, W. E.: The Effect of Various Neutral Solutions on Gastric Discharge, Gastric Secretion and Duodenal Regurgitation. *Arch. Int. Med.*, 1918, xxi, 48.

In a recent publication attention was called to various conflicting experimental and clinical observations concerning the relation of acidity of gastric contents to the rate of gastric discharge. In general, physiologic literature supports the theory that an acid reaction is essential to and hastens gastric discharge up to an optimum acidity of from 0.15 to 0.25 per cent. Some clinical observers found that so-called hyperacidity increased gastric motility, while others considered it a contributing factor in stasis and gastric dilatation.

To test this hypothesis and to secure data concerning the effect of varying chemical conditions in the stomach on gastric secretion and duodenal regurgitation, several series of experiments were undertaken by the author, using different concentrations of neutral solutions.

The conditions imposed were identical with those of the acid series previously reported, namely, first, a normal fasting stomach; second, fluid injections of constant temperature and quantity, but of varying concentrations; third, abolishment of inhibitory reflexes by pithing the spinal cord or sectioning the splanchnic nerve; and fourth, general ether anæsthesia. As a check on the foregoing, parallel experiments were made on animals with the pylorus ligated in order to eliminate any errors in the calculation of the rate of discharge from the stomach which might arise from the secretion of an unknown quantity of gastric juice.

From his study Morse makes the following summary:

Solutions of sodium chloride varying from 1 to 10 per cent slightly augmented the rate of discharge of fluids from the stomach of anæsthetized and pithed or splanchnicotomized dogs. Solutions of concentration above 3 per cent produced an increase of fluid in the stomach by osmosis, but with the pylorus ligated, the increase exceeded that obtained

with the pylorus patent sufficient to indicate a discharge greater than the discharge with water.

Solutions of sodium acetate slightly retarded the discharge of fluid from the stomach of anæsthetized and splanchnicotomized dogs.

The fluid content of the stomach was usually increased when solutions of sodium chloride or sodium acetate were injected in concentration above 3 per cent. This increase was attributed to osmosis exceeding the amount of discharge.

The rate of secretion of gastric juice as computed from the increase of acidity averaged 2.33 ccm. per 30 minutes, when water was injected into the stomach and the pylorus was patent. This rate of secretion was not materially altered by ligation of the pylorus or injection of solutions of sodium chloride, sodium acetate, or tabasco pepper sauce.

The acidity of solutions of hydrochloric acid injected into the stomach of anæsthetized dogs with the pylorus ligated was decreased, the rate of diminution increasing with increase in the acidity of the solutions.

The average discharge of water from the stomach was 14.3 ccm. per 30 minutes in 51 trials. By eliminating 11 extreme cases the average for 40 animals was reduced to 10 ccm.

Solutions of tabasco pepper sauce were discharged from the stomach at practically the same rate as water.

The mechanism of gastric discharge did not react to solutions of sodium chloride, sodium acetate and tabasco pepper sauce in the same manner that it reacted to solutions of hydrochloric acid.

GEORGE E. BEILBY.

Témoin: Gastric Surgery (Chirurgie gastrique). *Bull. Acad. de méd.*, Par., 1917, lxxviii, 737.

In a previous report in January, 1917, Témoin referred to 186 operations for gastric ulcer in which he demonstrated the necessity not only of establishing a gastrojejunal anastomosis, but also of resecting the pylorus and of extending this resection to include all the inflamed part of the stomach wall. In the present report he states that in 1917 he has done 56 new operations of this kind, with 5 deaths. Only 1 death however can be claimed as due to the operation. In every case excepting four or five, the whole of the pyloric region and even a portion of the gastric wall showed the characteristic signs of inflammation. Some had perigastric lesions, adhesions to neighboring organs, etc.

Témoin thinks that although gastro-enterostomy was a great advance in the treatment in cases of pyloric atresia, yet it is not sufficient. In such cases it preserves the patient's life. It also has great value when resection is impossible, or when the condition of the patient is such that time is valuable.

But in all other circumstances resection is indicated. When an ulcer is situated in the small curvature, a gastro-enterostomy does not suppress the pain, and danger of perforation remains. The smallest quantity of food passing through the pyloric orifice produces intense pain; and in cases of perigastric lesions it is necessary to resect and liberate the organ.

The author preserves the vessels of the great curvature. He described his method of vascular decortication in a previous article.

W. A. BRENNAN.

Barber, W. H.: Annular Segmental Gastrectomy. *Ann. Surg.*, Phila., 1917, lxvi, 672.

The author reports the results of a clinical and experimental study of the comparative motor activity of the stomach following segmental gastrectomy and following the removal of a saddle-shaped piece from the lesser curvature. His results include observations in three cases of segmental gastrectomy for ulcer. The findings seem to agree with those recorded in his experimental work.

In his animal investigations, the author used the open laparotomy method, and his results show that thoracic section of the vagi causes a more rapid and superficial fundic wave with an independent forcible pro- and anastaltic pyloric wave. Triangular gastrectomy was followed by more rapid and more superficial fundic waves, and more superficial incomplete pyloric waves.

Segmental gastrectomy was followed by normal or stronger fundic waves and independent, forcible pro- and anastaltic pyloric waves. Thoracic vagotomy produces an effect similar to segmental gastrectomy, due probably to the cutting off of the inhibitory effects of the vagi upon the motility of the pyloric end of the stomach. If the behavior were due to the mechanical effects, it would seem that the greater resultant wound from segmental gastrectomy should produce the most superficial waves, and the conclusion seems to be justified, i.e., that the relationship is probably dependent upon the discontinuance in the neuromusculature and not to the mechanical results of the respective operative procedures. GATEWOOD.

Achille, F.: A Rational Constricting Method of Pyloric Exclusion (Di un metodo costrittivo razionale di exclusione del piloro). *Gazz. d. osp. e d. clin.*, Milano, 1917, xxxviii, 1075.

The author thinks that constricting methods of excluding the pylorus are preferable to ligature. The weak point in most ligature methods, demonstrated both experimentally and clinically, is the fact that there is a tendency to canalization and re-functioning of the pylorus.

The author thinks that satisfactory constriction would be obtained from the use of a rubber tape band. Calabrese some time ago made a pyloric exclusion in a dog by constricting the region of the antrum with a strong rubber band. The animal had had a contemporaneous gastro-enterostomy. It lived and was killed six months later. Examination showed that the pyloric closure was perfect in the strictured region and those signs of reaction observed when other materials were used

were not seen. The constricted point was observed as a projecting ring covered with newly formed connective tissue.

The author points out that rubber may remain for a long period in the human tissues without undergoing any alteration. He thinks it would be better to use tape than the rubber band used by Calabrese, as it would exert a more regular and uniform pressure on the parts. The tape is fixed at the selected point by Lembert sutures which assists in the connective tissue-forming activity about the rubber. The constriction should not be too severe.

The author thinks that Calabrese's experimental trial is sufficient to show that the method might be applied to the human subject. W. A. BRENNAN.

Pacini, A. J. P.: Blood in the Stools in Duodenal Ulcer. *Med. Rec.*, 1917, xcii, 942.

The author believes that when a suggestively characteristic history is obtained, the finding of occult blood in the stools warrants a confident diagnosis of duodenal ulcer. One must feel certain, however, of having excluded that arising from food, from hæmorrhages in other parts of the gastro-intestinal tract, from hæmorrhoids, and, in the case of female parts, some blood occasionally present in vaginal discharges.

Adler's benzidin test has registered against it a few objections, but it embraces so many commendable features as to place it first in consideration, in the view of the author. In this test an alcohol and ether extract is a necessary requisite.

In a series of 32 cases of duodenal ulcer wherein the clinical diagnosis was rightly confirmed at operation, routine benzidin tests were positive in 26 and negative in 6 of the cases.

Common opinion based upon established laboratory investigations is that the benzidin is more delicate then the guaiac test. It was not possible to confirm this in the present short series studied. It is not denied, however, that in a watery solution of blood, benzidin will react in dilutions with which guaiac has failed. As a precaution against occasional error revealed by this finding, it appears advantageous to conduct both tests upon the same stool.

In conclusion the author makes the following suggestions: The blood in the fæces is a finding all-positive when extra-intestinal sources are absolutely eliminated in cases of duodenal ulcer. The examinations should include a guaiac test, the benzidin test, a spectroscopic search for hæmatin, and a microscopic search for hæmin crystals.

E. C. ROBITSHEK.

Garrow, R. P.: Acute Torsion of the Whole Mesentery of the Small Intestine. *J. Roy. Army M. Corps.*, Lond., 1917, xxix, 714.

A soldier while in the trenches was seized with abdominal pain, vomiting and diarrhœa. When examined in the hospital, he was pale, his pulse was 140, there was profuse perspiration, and the abdomen was soft but not distended. He was treated as a case of dysentery. He died thirty-six hours after onset of the symptoms.

On autopsy acute torsion of the whole mesentery of the small intestine was found. With the exception of the duodenum, together with nine inches at the upper end of the jejunum and three inches at the lower end of the ileum, the entire length of the small intestine was of a deep plum color and dilated enough to fill the distended abdomen. The lumen was filled with ordinary intestinal contents and with much blood and gas. The surface was smooth and glistening. There was no peritonitis.

Behind the mass of dilated intestine could be felt a hard, rope-like structure about the thickness of the finger, stretched tightly over the bodies of the lumbar vertebræ from above downward to the right. This was found to be the mesentery of the small intestine twisted on itself from left to right. It required three and one-half turns to undo the twist. No apparent cause could be found for the condition. There was no sign of gangrene in the small intestine; the engorgement with blood was due to interference with the mesenteric circulation, complete arrest of the flow in both veins and arteries.

Weible of North Dakota in 1914 collected from the literature 66 cases of acute torsion of the mesentery; of these, 23 recovered after operation. In only 2 of these cases did the torsion amount to 720°, i.e., two complete turns. The case now reported therefore appears unique as regards the amount of the twist, i.e., 1260°. W. A. BRENNAN.

Quarella, B.: Retrograde Intestinal Gangrene with Particular Reference to the Pathogenesis (Contributo allo studio della gangrena intestinale retrograde con particolare riguardo alla patogenesi). *Riforma med.*, Napoli, 1917, xxxiii, 830.

Quarella successfully operated upon a case of gangrene of the intestine and appendix due to strangulation in a scrotal hernia. The contents of the hernial sac were composed of the cæcal ampulla, the base of the appendix, and about 35 cm. of the small intestine. The intestinal segments were in a good state of nutrition, but the appendix and intermediate tract of the small intestine, 50 cm. long, were in advanced necrosis. Resection of the appendix and of the loop of necrotic intestine, with end-to-end anastomosis, resulted in a prompt recovery.

Quarella also reports a second case in a man sixty years old who thirty years before had been operated upon for a bilateral scrotal hernia. The hernia recurred on the left side, but was easily reducible. Recently the occurrence of acute symptoms led to the operation now reported. The hernial sac was isolated after difficulty and found to contain three intestinal loops, two of them about 10 cm. long and the third about 20 cm. They were congested and slightly ecchymotic. Two intermediate loops were outside the sac, the upper partly ecchymotic but the lower loop markedly necrotic. The

involved intestine, measuring 98 cm., was resected and a lateral anastomosis done. The patient died in collapse the following day.

From 1880 to 1894, three cases of strangulation of the intermediate intestinal segment in a hernia were reported; but it was only in 1895 that Maydl introduced the term "retrograde strangulation" to indicate the phenomenon by which the strangulated part of the organ is found in the abdomen, while the remainder usually in normal condition is strangulated in a hernial sac.

Since then a fair number of cases have been reported in German and Slavic literature, but few in English, French, and Italian.

Retrograde strangulation has been observed in inguinal, crural, umbilical and other herniæ. It is most frequent in inguinal. In regard to sex and age, it occurs in about seven men to three women, and at the ages of forty to sixty years generally. There are usually two intestinal loops in the sac. The segment in the sac is usually of the small intestine and is from 60 to 70 cm. in length. Wendel collected 65 cases. In 12 cases in which the loops were only very slightly altered, the external loops were found intact in 4 cases, slightly altered in 3, and gangrenous in 5. In 26 cases in which the intermediate loop was moderately altered but not gangrenous, the external loops were intact in 15, slightly altered in 9, and necrotic in 2. In 27 cases in which the intermediate loop was necrotic, the external loops were normal in 8, slightly altered in 11, and gangrenous in 8.

Quarella reviews the literature at length with a view to discovering the pathogenesis of the condition, and summarizes the theories put forward by various authors. He has made animal experiments on guinea-pigs to determine the pathogenesis of retrograde intestinal gangrene. He arrives at the conclusion that the essential cause of this is the strong venous congestion, the hæmorrhagic extravasation, and the parietal and mesenteric thrombosis of the internal loop due to severe obstruction of its return circulation. Such difficulty in the circulation is favored by the anatomic disposition of the blood supply. The frequent integrity, relative or absolute, of the external loops when there are no unfavorable complications, may depend on the peculiar mode of the strangulation.

The prognosis of retrograde strangulation is generally more grave than that of ordinary strangulated hernia, and the mortality is accordingly very high. In unoperated cases a fatal issue is certain. In 36 operated cases in Wendel's collection the mortality was 75.6 per cent. In 24 of them in which the intestine was resected, the mortality was 62.5 per cent. Better results are obtained in cases operated upon early. In the cases which recovered, the time elapsing between strangulation and intervention was about twelve hours; and in the fatal cases about fifty-two hours. Palliative operations have in general been failures, and intestinal resection is always to be the choice if the patient's condition permits it. The gangrenous condition may demand extensive intestinal resection. In 5 of the cases in which more than two metres of the intestine were resected, there were 3 recoveries. W. A. BRENNAN.

Scott, J. R.: Tuberculosis of the Appendix. *Ann. Surg.*, Phila., 1917, lxiv, 648.

Since the recognition of the disease by Corbin in 1873, tuberculosis of the appendix has attracted the attention of both the clinician and surgeon. However, there are but 44 articles to date upon the subject, 9 of which have been contributed by physicians of the United States.

The disease is found more often in males than in females, the ratio being as 3 to 2. Most of the cases reported have occurred in young adults.

The existence of primary tuberculosis of the appendix has been denied, but Beck reports the autopsy findings in a case in which there were no evidences of tuberculosis elsewhere. These cases are probably implantations favored by fæcal stasis which often occurs in the appendix.

The secondary form is much more common. It may arise as a direct extension from tuberculous adnexa, or from ileocæcal tuberculosis, or by invasion through the blood stream from any remote focus, as the lungs.

The diagnosis is difficult, although about 0.5 per cent of appendices surgically removed are tuberculous. It rests upon the demonstration of an afternoon temperature, progressive loss of weight, evening sweats, and pain and tenderness in the right lower quadrant. The prognosis is unfavorable except in the very rare primary form. The treatment is operative whenever possible, although active pulmonary lesions contra-indicate operation.

Three forms are usually described, the miliary, the ulcerative and the hyperplastic. GATEWOOD.

Porter, L.: Appendicitis in Childhood; a Study of 100 Cases. *Calif. St. J. Med.*, 1918, xvi, 10.

The author in a study of 100 cases of appendicitis in childhood found that a large proportion of the children were in their third year; sex incidence was about equal. Pain referred to the right lower quadrant of the abdomen occurred in almost all cases. General abdominal pain occurred in 57 cases, sometimes preceding and sometimes following the pain referred to the right side. Pain also occurred in the epigastrium, bladder region, and right leg, accompanied by characteristic tenderness on moving the limb; vomiting was absent in 17 cases. Chills occurred in 15 cases.

The temperature ranged from normal to 104 degrees, the pulse from 80 to 160; the respirations from 22 to 70. Leucocytosis varied from 8,000 to 25,000. Differential count showed a polymorphonucleosis of from 45 to 90 per cent.

In 37 cases rupture of the appendix occurred before operation, 23 having general peritonitis;

recovery followed early and free drainage. In 60 cases, there was a history of previous attacks of tonsillitis. A rapid progress to gangrene and perforation is much more common before the fifth year than later in life; 73 per cent of patients five years old showed perforated appendices in contrast to 28 per cent between ten and fifteen years.

Diaphragmatic pleurisy is the only condition it may be really difficult to differentiate; other conditions, especially abdominal adenitis, may be confused with it. Parents should be taught to see a potential appendicitis in every case of abdominal pain. H. H. FREILICH.

Arnold, I. A.: Suppurative Appendicitis. *Internat. J. Surg.*, 1917, xxx, 344.

The author has recently observed two cases where the pus burrowed downward into the pelvis, also upward behind the colon, pointing in the groin and over the crest of the ilium, rendering it difficult to determine whether there was a psoas, iliac or appendicular abscess.

The further the abscess from the median line, the more favorable the prognosis. The most important phase of the blood count is a relative increase in the polynuclear cells. With little or no leucocytosis, this is a positive indication of inflammation. The percentage of increase in polynuclear cells varies with the severity of the inflammation. If below seventy, neither pus nor gangrene is to be expected.

In connection with operative procedures, a few "don'ts" seem appropriate:

1. Don't get too close to the inner margin of the abscess.
2. Don't try to remove the appendix in all cases.
3. Don't irrigate.
4. Don't try to drain the pus cavity with gauze.
5. Don't keep the patient too long in bed.

It is believed that heretofore this class of patients has been kept too long in the recumbent position. While it would be difficult to state just what length of time they should remain in bed, as each individual case must be considered upon its merits, from six to ten days would seem quite long enough in the average case. EDWARD L. CORNELL.

Walscheid, A. J.: Single Suture Appendicectomy. *N. Y. M. J.*, 1918, cvii, 8.

The anatomy of the infundibulopelvic ligament in its appendicular relation indicates the removal of the appendix in all pelvic operations. By the selection of a technique calling for speed, simplicity, and gentle manipulation, the author believes the added risk of the operation to be less than the future risk of an attack of appendicitis. and avoids many of the factors that make a secondary operation difficult and dangerous.

On completion of the pelvic work the patient is first replaced in the horizontal posture. The tip of the appendix is picked up in a clamp. A long sixteen- or eighteen-inch suture is carried through the clear triangular space at the base of the appendix and tied, thus ligating the appendicular artery. The mesentery is then cut free, leaving a small stump.

Continuous with the appendix, at its base, is the longitudinal stria of the cæcum. One-fourth of an inch from this base the needle is carried with a Lembert-Czerny stitch as a fixation suture to prevent the ligature from slipping. The needle is now carried back and inserted through the mesentery between the first ligature and the base of the appendix, and tied to the proximal end of the first knot. The appendix is clamped, cut, and the stump treated with carbolic acid and alcohol.

Anterior to the mesentery and upon the lower portion of the cæcum, running in the direction of the ilium, there is always a fascial fold called the fold of Treves. This fold is now picked up on the needle and carried over to the most dependent portion of the cæcum, where it is fixed with a Lembert-Czerny suture and tied. This covers the stump of the appendix and completes the operation, requiring in all five or six minutes' time.

The author cites one death due to intestinal obstruction from an acute gangrenous appendicitis, which came under his treatment suffering from appendicitis complicated with obstruction. A previous hysterectomy had been done. The author advises the removal of the appendix in every pelvic operation, and for speed, simplicity and prevention of shock has devised the single suture operation. He shows four illustrations of the operation.

Landsman, A. A.: The Diagnostic Significance of Bleeding from the Rectum. *Med. Rec.*, 1918, xciii, 63.

The author gives the various conditions which may cause bleeding from the rectum. These are classed as surgical or medical.

Surgical conditions may be divided into:

1. Local conditions not acutely surgical. They may include internal hæmorrhoids; ulcerations, either (a) simple, or (b) specific, as tuberculosis, syphilis, gonorrhœa, and dysentery; proctitis, proctocolitis, enterocolitis, simple and specific; tumors, both (a) benign, as fibromata, lipomata, etc., and (b) malignant, as carcinoma, papilloma, sarcoma, etc.; stricture, specific and non-specific; procidentia; fissure; cryptitis; helminthiasis; diverticula; gastric or duodenal ulcer; impaction; chronic constipation.

2. Local conditions acutely surgical. These include foreign bodies; volvulus; invagination; strangulated hernia; portal or mesenteric thrombosis; typhoid fever; appendicitis; rupture of an aneurism; postoperative bleeding following operations on the rectum and colon; abscesses.

Medical conditions may be divided into:

1. Mechanical causes, including (a) hepatic disease; (b) chronic nephritis; (c) cardiac decompensation; (d) arteriosclerosis and conditions accompanied by high blood-pressure.

2. Defective blood states: (a) hæmophilia; (b) purpura; (c) leukæmia; (d) pernicious anæmia; (e) scorbutus; (f) icterus.

3. Toxic conditions: (a) from without; i.e., poisoning by arsenic, mercury, phosphorus, sulphurated hydrogen, nitrobenzene, etc.; (b) from within; i.e., scarlet fever, yellow fever, cholera, malaria, septicæmia, pyæmia.

A very careful history should be taken of every patient; particular emphasis should be placed on the age, occupation, past or present illnesses or operations, habits, presence or absence of protrusions or pain, and any loss of weight. One should determine the character of the bleeding, the length of time it has lasted, its relation to defecation, the relative quantity lost, whether expelled pure or mixed with pathological discharges, together with a very complete physical examination of the patient.

There is but little direct connection between loss of weight and loss of blood, but there is a very close relation between loss of weight and the cause of the loss of blood. There is a great loss of weight in carcinoma, multiple polyposis, chronic enteroproctitis or coloproctitis, even with little bleeding; small loss of weight in piles, polypi and non-malignant tumors, even with considerable bleeding. It must be remembered that malignant growths may be engrafted on benign ones. C. A. Bowers.

Davis, C. B.: Cancer of the Rectum. *Surg. Clin. Chicago*, 1917, i, 1221.

The choice of operation depends on the site of the growth. If the disease is limited to the anal epithelium, it is not necessary to remove the ampulla or the glands behind the ampulla. The operative technique for cancer of the rectum is given as follows:

Through an incision in the perineum a ligature is carried around the bowel above the level of the anal canal. The sphincters are incised anteriorly and posteriorly and segments are turned aside. The ampulla is resected and the bowel is brought down and attached to the anal sphincters.

Various methods of termination of the operation are employed after removal of the tumor mass. The anus may be reconstructed, or a sacral or abdominal anus may be formed. Where an abdominal anus is formed, by leaving the ampulla as a blind pouch, mortality and shock are lessened.

Tumors at the rectosigmoidal junction may be treated by removal and end-to-end anastomosis or abdominal termination of the bowel. End-to-end anastomosis carries a high mortality and frequently results in fæcal fistulæ.

In all cases of cancer of the rectum it is well to open the abdomen to determine operability. Malignant involvement of the glands of the mesorectum or of the uterus or vaginal wall is no contra-indication to operation. Involvement of the liver, prostate or sacrum contra-indicates operation. The immediate mortality in posterior route operations is lower than in the combined method, but a larger number of ultimate cures result from the combined abdominal and perineal operation.

In constructing an abdominal anus, by carrying the gut upward under the skin before anchoring, a better functionating anus is obtained.

Many cases of cancer of the rectum are diagnosed as hæmorrhoids. Digital or proctoscopic examination establishes the diagnosis. I. E. Bishkow.

Ochsner, A. J.: Carcinoma of the Rectum; Excision; Transplantation of the Sigmoid into the Perineum; Technique of Operation. *Surg. Clin. Chicago*, 1917, i, 1213.

The patient was fifty-three years old. Passage of blood and mucus per rectum with some tenesmus for the preceding six weeks were the only symptoms. Examination showed that 4 cm. above the internal sphincter there was a hard cauliflower-like mass encircling the lumen of the bowel. A diagnosis of carcinoma of the rectum was made.

A colostomy opening was made by cutting the skin, superficial fascia and splitting the external and internal oblique in the direction of their fibers. The descending colon was drawn through and anchored by passing a strip of gauze under the loop of bowel. Through a median incision the bowel was grasped transversely with two heavy clamps 5 cm. above the mass and cut. The lower segment with the peritoneum and fat was dissected down to the rectum.

The patient was now placed in a lithotomy position and an incision made encircling the anus. The levator ani was severed on each side and the tissues dissected upward with the finger. All bleeding points were ligated step by step. The mass was removed and the bowel brought down and sutured into the middle of the perineum. Lateral cigarette drains were inserted.

A precaution in after-treatment is not to permit the patient to lie on his back. The bed is elevated and the patient kept on one side or the other.

A glass tube is substituted for the gauze to anchor the colon in a colostomy incision, and a colostomy opening made in forty-eight hours if necessary. This protects the operative field from contamination until healing is complete. I. E. Bishkow.

Landsman, A. A.: Operative Methods for the Cure of Hæmorrhoids. *N. Y. M. J.*, 1918, cvii, 59.

Divulsion of the sphincter is indicated in cases of general engorgement and congestion, in the case of a small tightly contracted anus, in hypertrophy of the levator ani and the sphincter ani. Divulsion means the stretching of the sphincter until the fibers have lost their tonicity, but not a tearing of the fibers. Neurological examination for tabes should be made in all cases before operation to avoid cases of incontinence.

Injection with various solutions is not safe or effective. Cases of sloughing and gangrene may occur. The application of caustics is condemned.

Crushing operations and excision without suture

may result in secondary hæmorrhage. The clamp and cautery operation is not used as extensively as formerly because of the occurrence of secondary hæmorrhage.

The ligature operation is the one of choice. The Whitehead operation, i.e., total removal of the hæmorrhoid-bearing field, is frequently followed by stricture. Infection is also more liable to occur.

The electric cautery is applicable in small hæmorrhoids.

The complications occurring in hæmorrhoid operations are: infection, secondary hæmorrhage, excessive postoperative pain, disturbed bladder function and spasm of the levator ani muscle.

I. E. BISHKOW.

LIVER, PANCREAS AND SPLEEN

Griffith, J. P. C.: Primary Carcinoma of the Liver in Infancy and Childhood. *Am. J. M. Sc.*, 1918, clv, 79.

The patient, aged 21 months, had a negative history. Previous health was good, except for some degree of anæmia, supposed to be dependent upon indigestion, and a constant tendency to constipation. The winter previous her appetite had been abnormally great, although she would take little other than milk, and for some time she had had attacks of vomiting nearly every morning. This condition had improved. Five weeks before the child was seen, her father accidentally discovered a lump which could be felt beneath the costal margin on the right side in front.

Examination showed a well nourished infant, with a slightly pale skin. Just below the costal border, midway between the midsternal and the right mammillary lines, was a visible prominence which on palpation was found to be a hard, smooth mass, apparently with a rather firm edge. It appeared to be connected with the liver. Bimanual palpation in the renal region produced no movement of the mass. It changed position with respiration. The whole liver was decidedly enlarged, and its edge could be felt as far as the left mammillary line at the costal border.

At operation the right lobe of the liver came well into view, and situated in its substance was a dark-gray, glistening, fibrous capsule covering a mass the size of a large orange, which projected slightly above the surface of the organ and extended in depth through the entire thickness of the lobe, becoming visible upon the under surface when the liver was lifted. There was no evidence of infiltration of the hepatic tissue beyond the capsule of the growth or of involvmement of any organs as far as could be seen. No adhesions were present. Incision through the capsule showed a soft, whitish substance, much resembling in color and appearance the tissue of the thymus gland or pancreas. Inasmuch as the case appeared to be an inoperable one, the wound was closed.

The growth histologically was a carcinoma simplex, but at one or two points there were attempts at tube arrangement of such a character that the growth originally may have been a cancer of the bile-ducts.

The mass continued to grow in a downward and forward direction and later toward the left hypochondrium, the abdomen finally becoming distended by it. At times the increase of size would appear to be rapid and then would follow periods of quiescence. As time passed, the superficial veins grew more prominent, until finally the larger were about the size of a lead pencil. The tissue about the navel became discolored and very thin. No ascites or œdema were present. There was sleeplessness and increasing debility, but apparently little pain. Death occurred a few months later.

EDWARD L. CORNELL.

Fowler, W. F.: Stricture of the Gall-Bladder. *Ann. Surg.*, Phila., 1917, lxvi, 679.

The author reports a case of stricture of the gall-bladder characterized by striking symmetry of the two portions. He gives the name "dumb-bell gall-bladder" to this particular variety. He considers it undoubtedly a case of cholecystitis chronica cystica.

Strictures of the gall-bladder may be divided into (1) the congenital, and (2) the acquired. Else classifies the congenital types as (a) annular, (b) those in which the folds of the inner layers occlude the lumen partially, and (c) those in which the fundus is folded upon the body of the gall-bladder. The last mentioned is the most usual type.

The acquired strictures may arise from destructive lesions beginning in the mucosa and causing any degree of constriction from a very slight narrowing to a complete obliteration of the lumen of the connecting strait. Acquired strictures may also arise from intramural infections, pathological processes beginning in the serosa, and from adhesions existing between the gall-bladder and other organs or the abdominal wall. Other causes are perforating wounds and malignancy.

The author's case gave a definite history of appendicitis and the diagnosis was not made prior to exploration. The gall-bladder contained no bile, but merely a few drops of white cystic fluid and two marble-sized round stones. GATEWOOD.

Martin, H. H.: Gall-Bladder Surgery. *J. Indiana St. M. Ass.*, 1917, x, 463.

This article is historical in nature and the author follows in a clear-cut manner the advancement of gall-bladder surgery.

The teachings of Galen were accepted until the beginning of the seventeenth century. He held that the liver was the seat of the mind, that it made the blood, and that the veins had their origin in it. After Harvey's discovery of the circulation in 1616, Tselli's discovery of the thoracic duct in 1622, and Perquet's discovery of the lacteal vessels in 1674, the theories of Galen were attacked and to a certain degree overthrown.

The first successful removal of gall-stones was noted in 1622 and the first successful cholecystectomy was done on a dog in 1630. The author's conclusions that the common duct dilates after the removal of the gall-bladder has been verified by Judd and Mann.

From 1687 to 1742, as a result of injury to the abdominal wall, involving the gall-bladder, gall-stones were removed three times. In 1742 Petit devised an operation to remove stones in a distended gall-bladder, which he determined was adherent to the abdominal wall. In 1774 Block thought that the adhesions to the wall were necessary, and in these cases applied caustic potash over the gall-bladder, and after the tissues were destroyed down to the gall-bladder he opened it.

In 1867 Bobbs of Indianapolis made the first successful cholecystostomy. In 1878 Kocher did a two-stage operation of draining the gall-bladder. It was not until 1882, after Langenbach did a successful cholecystectomy, that gall-bladder surgery received much attention. In 1888 Bevin published an extensive review of the anatomy of the gall-bladder region. In 1900 Summers advocated inverting the cut edges of the gall-bladder about the drainage tube and stitching the gall-bladder peritoneum to the parietal peritoneum.

In 1900 W. J. Mayo advocated the removing of the mucous membrane of the gall-bladder where the pathology is extensive. Loekker stated that the gall-bladder should be treated as the appendix and removed if there was acute or chronic inflammation. Means of Cleveland, Richardson and Marcy of Boston, and Deaver of Philadelphia, advocated early operation, while Senn was in favor of operating only to save life.

In 1901 Halsted announced that he could produce pancreatitis by forcing bile directly into the pancreatic duct.

Through Rosenow's work it has been learned that the infection is not alone in the bile, but the tissues of the gall-bladder as well.

In 1916 Deaver announced that 65 per cent of his failures were due to the non-removal of the gall-bladder. Mayo stated that cures following cholecystostomy were 53 per cent, that of cholecystectomy formed 71 per cent. C. A. BOWERS.

Torrance, G.: Cholecystectomy; with a Report of 65 Cases Operated upon for Gall-Bladder Disease. *Am. J. Surg.*, 1917, xxxi, 323.

The author reports operations upon 65 cases of gall-bladder disease, in 20 cases of which the gall-bladder was removed and in one case a cholecyst-enterostomy was done for persistent fistula of two years' duration. Seven cases had been drained previously. There were 17 males and 48 females.

In animals which have no gall-bladder there is found a large common duct. Judd and Mann in experiments found that the ducts usually became dilated within sixty days after removal of the gall-bladder. All of the ducts were dilated except those in the liver itself. For a time the pressure in the ducts is increased until the muscle of Oddi is overcome and then the bile flows continuously. When this muscle is dissected out at the time of operation, there is no dilatation of the ducts.

Meltzer considers the muscle fibers of the gall-bladder and those of the papillæ as antagonistic. The vagus seems to contain motor fibers for the sphincter of the common duct and inhibitory nerve-fibers for the gall-bladder.

That the gall-bladder is used as a reservoir is questioned by many. The most common theory is that the gall-bladder contracts rhythmically eight to ten times per minute and overcoming the sphincter of Oddi forces the bile into the duodenum.

Mayo-Robson lays stress on the importance of always preserving the gall-bladder where there is any disease of the pancreas.

Rosenow has shown that infection is brought to the gall-bladder through the blood stream; the bacteria become lodged in the capillaries of the wall of the gall-bladder and infarcts cause stasis, infiltration, and thickening of the mucous membrane, with necrosis.

Gall-stones are rarely ever found in the very acute and severe infections of the gall-bladder, but are the result of a previous mild infection. Seventy-five per cent of gall-stones are found in women, and in 80 per cent of these the symptoms develop during pregnancy.

Bevan says cholecystectomy is done in about 90 per cent of cases, cholecystostomy being reserved for simple cases with little gall-bladder change and no cystic duct stones.

Lund advises removing the acutely inflammed and especially the gangrenous gall-bladder, and those where there is an acute perforation.

C. A. BOWERS.

Mason, J. T.: A Pancreatic Cyst; Removal of Three-Fourths of the Pancreas; Recovery. *Northwest Med.*, 1918, xvii, 24.

The author's patient was a married woman, aged twenty-four, who complained of cramp-like pains all over the abdomen, pain radiating to the left shoulder, frequent vomiting, and constipation. Physical examination revealed in the lower epigastric and upper umbilical regions a tumor which was very tender and immovable. Previous to operation this mass enlarged very rapidly, and at the time of operation it was about the size of a baby's head. The patient had relief from pain only by lying on her left side, with her knee as near her chin as possible.

Operation through a right rectus incision revealed the stomach, gastrocolic omentum and transverse colon flattened out over the mass and adherent to it. The tissues were all œdematous, even the parietal peritoneum. The approach was made through the mesocolon and the cyst was tapped, removing four quarts of viscid fluid.

With the exception of the head, the entire pan-

creas was lying in this cyst; it was gelatinous in appearance and past all possibility of restoration. By loosening the pancreas from behind, two chromic catgut sutures were slipped around it, one at the tail, the other at the neck, and about three-quarters of the pancreas was removed. The drainage tube was left by making three different purse-string sutures, one above another, and then the fat of the omentum was tucked around this.

The tube continued to drain for forty-three days, nine and one-half ounces being the largest amount received from the tube and one and one-half the smallest in any twenty-four hours. The patient left the hospital on the fortieth day, practically well.

P. G. SKILLERN, JR.

Kennedy, J., and Burge, W. E.: The Effect of Pancreatectomy on the Catalase Content of the Tissues. *Arch. Int. Med.*, 1917, xx, 892.

The authors mention the older workers who recognized the coincidence of diabetic symptoms and lesions of the pancreas, but the literature on the subject is so enormous that no attempt was made to review it.

The present investigation was begun in an attempt to find an explanation for the defective or imperfect oxidation in diabetes. The authors found that the amount of oxidation in the different muscles was directly proportional to the amount of catalase; that by increasing or decreasing the amount of work, and hence oxidation in a muscle, there was a corresponding increase or decrease in the catalase content. Since in all the instances cited by them where oxidation was increased or decreased, or rendered defective, there was a corresponding increase or decrease in catalase, the conclusion was drawn that there exists a very close relationship between catalase content and amount of oxidation.

The animals used in the investigation were dogs. Several of these animals were depancreatized. Examination of the urine on the first day after the operation showed the presence of sugar in all the depancreatized animals. The longest time any animal was permitted to live after the operation was 13 days, while the shortest was 6 days. Those that had lived 13 days were in very bad condition and showed large amounts of sugar in the urine. After the animals were etherized their blood-vessels were washed with large quantities of 0.9 per cent sodium chloride until free of blood, as was indicated by the fact that the wash water gave no test for catalase. The bloodless liver and heart were then removed and ground up separately in a hashing machine.

The results of the determinations are given by the authors in a table of catalase determinations in normal and diabetic liver and heart, and by comparing the data it can be seen that the catalase content of the livers of the diabetic animals was decreased 72 per cent and that the catalase content of the heart was decreased 48 per cent over that of normal animals.

The authors found that the catalase of the tissues of depancreatized dogs decreased during the first five or six days, at which time a certain low level was reached and maintained, and they also present evidence showing that catalase is formed in the liver, and that this is normally given off to the blood as a result of stimuli received over the splanchnics.

The authors summarize their results as follows: Extirpation of the pancreas decreased the catalase content of the liver by about 75 per cent, which resulted in the decreased output of catalase into the blood and hence a lessened supply to the tissues. The decreased catalase content of the tissues may account for the imperfect or defective oxidation in diabetes, since the amount and intensity of oxidation is so inseparably linked with catalase.

GEORGE E. BEILBY.

Burket, W. C.: Changes in the Peripheral Blood Consequent upon the Diversion of the Splenic Blood into the General Circulation. *J. Exp. Med.*, 1917, xxvi, 849.

A review of the literature revealed the fact that numerous investigators had attempted to discover the function of the spleen by means of a study of the splenic circulation itself, and Burket draws attention to Eck's method of diverting the portal and splenic blood into the general circulation and the various theories advanced by other investigators in regard to the function of the spleen that were based upon the distribution of the splenic circulation as determined by anatomical dissection in animals and in human cases. His search of the literature, however, revealed only one instance in which a study was given of the peripheral circulation after the splenic blood alone had been diverted into the general circulation. On account of the fact that diversion of the portal blood into the inferior vena cava blood from all the tributaries of the portal vein was included, it seemed to Burket advisable to make a thorough and careful study after the splenic blood alone had been thrown into the general circulation. He reports upon a series of experiments because of the rather uniform results obtained in the five large dogs that were studied, and the simple method that was used to divert the splenic blood into the general circulation.

The method employed consisted in the study of the five dogs over a sufficiently long period before operation in order to establish accurate controls for each dog; and after the splenic blood had been diverted into the general circulation, this study was repeated over a period varying from one to four months' duration in the different animals. In addition, two weeks before the end of the experiment the dogs were vitally stained to a maximum with trypan blue, and finally they were killed in order to determine the gross and histologic findings.

At the time of operation, with the animals under ether anæsthesia, the spleen was first measured through a left rectus incision and a small histologic control section removed. After the splenic and the

left renal vein had been divided between double ligatures, a lateral anastomosis was made between the renal and splenic veins, using fine beaded black silk, oil technique, and a Peet three-bladed, spring-jawed blood-vessel clamp; and lastly, all possible collateral circulation with the spleen was divided, especially the communicating branches between the spleen and the stomach. The animals recovered rapidly from operation and the wounds healed by first intention in every case. The dogs kept in splendid general condition throughout the experiment and several of them were operated upon a second and a third time in order to verify intra-abdominal conditions, with the result that no collateral circulation and no intra-abdominal adhesions were found, and the anastomosis was working.

In a series of tables and charts the author gives in great detail the results of his observations, and from his experiments he draws the following summary:

The principal change in the peripheral blood consisted in the prolonged increase in number of the transitional white blood-cells, an active brief stimulation of the polymorphonuclear neutrophiles, which were later relatively decreased in number in four cases, in three dogs a late rise in number of the mononuclear and eosinophilous cells, and in one dog of mononuclear cells alone.

The normally high differential percentage count of polymorphonuclear eosinophiles in dogs would be expected on account of the numerous parasitic infections which they usually have.

The splenorenal venous anastomosis offered a simple and satisfactory method of diverting the splenic blood into the general circulation because it was easy and produced no gross abnormal intra-abdominal changes, and the vessels normally lay parallel to each other and were readily approximated without tension.

The operation was successful in every case; the animals did very well after operation and were healthy and active. No noteworthy histologic changes were observed in any of the organs or tissues. There was no essential change in bile production that could be detected by jaundice. The urine and stools showed no changes. GEORGE E. BEILBY.

Norris, C., Symmers, D., and Shapiro, L.: Banti's Disease. *Am. J. M. Sc.*, 1917, cliv, 893.

The authors state that Banti's disease as an entity has no legitimate claim to recognition and that the term long covered a conglomeration of conditions which are gradually being recognized. By an extensive study of abundant anatomical material the authors conclude that syphilis adequately fulfills all the requirements enumerated by Banti.

Their conclusions follow:

1. The so-called Banti's disease is neither an independent clinical nor anatomical entity, and the designation should be eliminated from the nomenclature of splenic pathology, since it not only carries with it the objections customarily urged against the surnamed diseases, but is in reality a manifestation of visceral syphilis. This conclusion is based on the following facts:

(*a*) The later stages of acquired syphilis are occasionally attended by enlargement of the spleen arising absolutely independently of cirrhotic changes in the liver, and, when combined with the secondary anæmia so constantly to be observed in the syphilitic, it fulfills the essential requirements of the first, or pre-ascitic stage of Banti's disease as originally postulated.

(*b*) In other cases of late acquired syphilis splenomegaly and cirrhosis of the liver are combined, in which event jaundice, subcutaneous and submucous varices, ascites, digestive disturbances dependent upon chronic passive congestion of the gastro-intestinal mucous membrane, hæmatemesis, and related changes constitute an exact clinical counterpart of the picture given by Banti for the intermediary and final stages of the disease described by him.

(*c*) The syphilitic cirrhosis of the liver just referred to is of two varieties, one corresponding to the atrophic or hob-nail liver of Laennec, in which syphilis is an etiological factor in at least one-third of all cases; the other, the coarsely lobulated liver in which syphilis is universally recognized as the specific cause.

(*d*) In 4,880 autopsies at Bellevue Hospital cirrhosis of the liver occurred 74 times in 314 luetic subjects, or in 23.4 per cent, and of this number there was an associated splenomegaly of marked proportions in 48, or 64.8 per cent. Of the 74 cases, 50 were of the coarsely lobulated type and 24 of the atrophic or hob-nail variety.

2. The histological changes in the spleen in the condition described by Banti are identical with those due to syphilis. The lesion is a chronic diffuse interstitial splenitis attended, in certain instances, by sclerosis of the malpighian follicles. Banti and his followers attach great significance to the latter finding. As a matter of fact, sclerosis of the malpighian follicles is characteristic only of recessive status lymphaticus, in which it occurs with almost unfailing regularity, and in the spleen of the so-called Banti's disease it is but a coincident histological change. K. L. VEHE.

Fottner, G. R., and Archibald, R. G.: A Case of Splenomegaly Treated by Splenectomy, with Report on Condition of the Blood and Spleen. *Lancet*, Lond., 1918, cxciv, 101.

In a girl of fourteen splenomegaly associated with hepatic enlargement and leucopænia and intermittent fever was treated by splenectomy. No cause for the splenomegaly was found. Six months after the operation the patient had gained in weight and strength and the leucopænia was less marked.

The author considers this a case of splenic anæmia allied to Banti's disease. LISTER TUHOLSKE.

SURGERY OF THE EXTREMITIES

DISEASES OF THE BONES, JOINTS, MUSCLES, TENDONS, CONDITIONS COMMONLY FOUND IN THE EXTREMITIES

Kreuscher, P. H.: Hypertrophic Villous Synovitis of the Knee-joint. *Surg. Clin. Chicago*, 1917, i, 1291.

This condition is frequently mistaken for tuberculosis and treated as such. The condition results from an infective process elsewhere in the body. It begins as an acute synovitis which becomes chronic with or without enlargement of the joint. A late picture of the disease shows marked enlargement of the joint with large masses protruding from either side of the patella and the quadriceps tendon and a rather less prominent patella.

Pathologic changes in these cases is the overgrowth of the synovial membrane and synovial fringe. This results from irritation of the invading organism and the repeated traumatism when the limb is in active use. On opening the joint, masses of hypertrophic villous tissue are seen; partial destruction of the cartilage, crucial ligaments and synovial membrane may be observed, but no destruction of bone.

The symptoms are less severe than one would expect. Frequently only a dull pain is present, or a feeling of stiffness in the joint. Sharp pain may be experienced after long continued traumatization.

In diagnosis, this condition must be differentiated from chronic synovitis, rheumatoid arthritis, Charcot's joint, tuberculosis and sarcoma. The cardinal signs are gradual enlargement of the joint; absence of the severe pain which one would expect in such an enlarged joint; oval boggy masses at each side of the patella; absence of patellar ballottement; no fluid on aspiration. The X-ray shows no destruction of bone.

Treatment should provide removal of the primary focus of infection, if possible; absolute rest of the limb by Buck's extension; autogenous vaccine; formalin and glycerine injections into the knee-joint. In an advanced stage, the only course is complete synovial capsulectomy. Kreuscher reports three such cases with operation. I. E. BISHKOW.

Moynihan, B.: Wounds of the Knee-Joint. *Boston M. & S. J.*, 1917, clxxvii, 717.

There is no department of surgery in which greater changes have occurred than in that concerned with the treatment of wounds of the knee-joint. For academic purposes the following classes of injury will be recognized:

1. Cases of clean perforating wounds of the knee-joint by a rifle bullet. They are rapidly sealed and present no evidences of inflammatory reaction.

2. Cases of penetrating or perforating wounds of the joint with a large aperture of entry, or of exit, or both, when the projectile or part of it is retained in the joint. All such cases must be operated upon and an X-ray examination is indispensable.

3. Cases of perforating or penetrating wounds of the joint with intra-articular fracture. This condition is a degree more serious than that in which the missile has become embedded in the end of the tibia or femur, and must be dealt with by adequate exposure and radical removal of all dead or severely damaged tissue.

4. Cases of injury to the knee-joint with extensive fracture of the articular ends.

In all cases the limb should be immobilized upon a splint at the earliest possible moment and kept so until a complete operation can be performed. The essential features in all operations are the excision of the wounds and the track of the projectile after preliminary sterilization by cautery or otherwise; and free exposure of the joint either by enlarging existing incisions or by long internal or external incisions, or by the formation of a flap by division of the patellar ligament. It is very important that all foreign bodies be removed.

The wounds are closed in layers by catgut sutures and drainage is secured by leaving a gap in the line of suture of the synovial membrane or by leaving a tube close down to but not into the joint. In severe staphylococcus or especially streptococcus infections of the joint, the wounds must be reopened and the synovial membrane stitched to the skin, free drainage of the joint secured, and some method of progressive sterilization adopted. Excision may be necessary in this type of case. It should be immediately done in cases of severe comminution of the articular ends with much loss of substance.

If the infection is severe in an extensive wound, the method of resection with wide, temporary separation of the ends of the bones should be done. Amputation is desirable in cases of extensive damage, especially with much infection.

GATEWOOD.

Nové-Josserand, G.: Orthopedic and Functional Results of Conservative Operations in War Wounds of the Knee (Résultats orthopediques et fonctionnels des operations conservatoires du genou en chirurgie de guerre). *Rev. d'orthop.*, Par., 1918, vi, 25.

The author operated upon 107 knee wounds; these included 26 lesions of the patella, 31 arthrotomies, and 50 resections.

Among the patellar lesions are included those cases in which the wound had attacked the anterior face of the knee, or in which the principal surgical intervention was removal of the patella. In the 26 cases the results show 5 cases of complete ankylosis, accentuated stiffness of the knee with poor movement in 9 cases; preservation of complete or very extensive movements in 12.

In the 31 arthrotomies which were done for deeper lesions or when they extended to all the cavities of the knee-joint, results showed complete ankylosis in 12 cases; incomplete ankylosis in 13 cases; preservation of movements above ten degrees in 6 cases. The author does not find that early intervention gives absolute assurance against ankylosis; it depends rather on the extent of infection at the time of operation.

In 50 resections the results were complete ankylosis in 27 cases; incomplete ankylosis in 15 cases; poor articulation in 8. In the great majority of cases of ankylosis the shortening has been moderate and permitted easy correction.

Certain cases which the author reports in detail show that non-consolidation appears due to the interposition of a thick layer of fibrous tissue between the bone surfaces. It is probable that the development of tissue in this part is due to defective coaptation. After resection the weight of the lower part of the limb has a natural tendency to separate the articular surfaces from each other; and the sutures made in the friable spongy tissue cannot always prevent this. Hence the author suggests maintaining the limb in a vertical position so that its weight would favor coaptation.

In summing up his results the author says that it is a generally accepted idea that the recovery of a movable and easily functioning joint consecutive to knee wounds is exceptional. In the great majority of cases, however, the amount of mobility preserved is rather a disadvantage because it diminishes the solidity of the limb and interferes with walking, without being sufficient to obviate the functional and social inconvenience of stiff knee. Consequently the return of motility should not be considered desirable when the lesion is not very severe. In many cases ankylosis is preferable and the more complete it is, the better is the function.

When mobility of the knee is especially necessary, it can be effected by a special operation which offers a better chance of success if done late when the traumatized area is less liable to infection.

W. A. BRENNAN.

Eisendrath, D. N.: Gunshot Wounds of the Femur. *Surg. Clin. Chicago*, 1917, i, 1309.

Eisendrath reports two cases of gunshot wound of the femur.

The first case was a compound comminuted fracture of the lower end of the femur involving the knee-joint. A lower fragment was wedged between two upper fragments. Following the experience of others in European military hospitals, this case was treated conservatively by immobilization and extension in a Groves wire cradle leg splint with twenty pounds extension. Fifteen hundred units of antitetanic serum were given as a prophylactic measure. The result was good.

The second case was a similar fracture, but the patient was in delirium tremens so that treatment could not be carried out. The result was malunion, with overriding and angularity, which will necessitate operative correction. I. E. BISHKOW.

Taylor, R. T.: The Maryland Epidemic of Infantile Paralysis in 1916. *Am. J. Orthop. Surg.*, 1917, xv, 759.

The report of the State Board of Health of Maryland showed 353 cases of infantile paralysis in 1916. The city of Baltimore had 206 cases. A monthly incidence showed the disease to be prevalent in August, September, October and November. The fatality was 33.8 per cent. Fifty cases were autopsied, showing œdematous cords and involvement of the lymphatics of the intestine and the adjacent mesentery. The ages of these cases ranged from birth to twenty-five years, the majority being about five years old. There were 289 whites and 64 negroes, 189 males and 159 females.

At the Kernan Hospital 48 cases were admitted, with 1 death due to inspiratory failure, a mortality of 2 per cent. H. W. MEYERDING.

Bayksen: Gangrene of the Limbs. *Muenchen. med. Wchnschr.*, 1917, xliii, No. 19.

Bayksen of the Rostock Clinic relates two cases in which after trauma of the limb vessels gangrene occurred due to vascular occlusion. In both cases the injury was beyond the vessels, which were in no way cut. There was no infection. Nevertheless stricture of the vessels occurred as if they had been too long compressed by a hæmostatic band.

In the first case a man received a gunshot in the vicinity of the popliteal artery. In a short time the symptoms of dry gangrene appeared. Operation showed the artery occluded by a thrombus about 6 cm. above the wound canal. Lexer some time ago demonstrated that at a distance from an injury caused by a projectile, lesions could occur in vessels which were not themselves injured. Lacerations of the intima and media may follow hyperdistension, and from this may occur the formation of aneurisms or thromboses. This appears to have been the mechanism in the case of Bayksen.

The mechanism in the second case was quite different. This was an explosion injury with multiple fractures and wounds of the soft parts and numerous hæmorrhages into the vascular sheaths. On the third day after injury while the course of the wound was regular, the arm became cold and mobility ceased. Operation in this case showed all the vessels preserved in their continuity even where the tissues were most destroyed; but they were strictured to about one-third of their normal caliber and completely anæmic. No thrombi were found. Microscopic examination of the vessels showed only numerous hæmorrhages into the vascular sheath. The author thinks that an abnormal vascular spasm caused the death of the limb and that the angiospastic disturbances were due to the explosion lesions.

Little is known of the action of mechanical shock

on the state of contraction of the vessels. Deutschlander observed a similar angioneurotic gangrene following a trauma, the opposite of spontaneous gangrene. After an injury of the soft parts of the fingers he saw phalangeal necrosis.

W. A. BRENNAN.

FRACTURES AND DISLOCATIONS

Hawkes, C. E.: Broken Neck. *Internat. J. Surg.*, 1918, xxxi, 5.

The author shows that, due to its anatomical peculiarities and to its protected position, the spine is rarely fractured. Fracture of the spine comprises less than one-half per cent of all fractures. He reports one case of fracture of the sixth cervical vertebra with slight cord injury. Complete recovery resulted under extension and a plaster jacket which fixed the neck and supported the head.

Ninety-one cases of spine fracture from Rhode Island Hospital records are reported. Among these, sixty-eight per cent died at the hospital.

There were 35 neck fractures with 77 per cent mortality; 44 of the dorsal spine with 68 per cent mortality; 13 fractures in the lumbar region with a mortality of 54 per cent.

Of the 29 survivors, 21 were crippled to a greater or less degree.

The cases that were operated upon show slightly less favorable results than those treated otherwise, and the author cautions against operating unless the X-ray shows a positive indication which cannot otherwise be removed.

The X-ray is of great value in diagnosis especially in cases presenting abdominal symptoms, helping to differentiate from visceral injuries.

In regard to prognosis, nearly all cases with complete paralysis of motion and sensation below the injury, with loss of sphincter control, died; those recovering sensation and motion in a short time were greatly crippled if they lived. None of those cured had complete paralysis more than a few hours, possibly due to concussion.

H. J. VAN DEN BERG.

Ashhurst, A. P. C.: Birth Injuries of the Shoulder. *Ann. Surg.*, Phila., 1918, lxvii, 25.

From a careful study of about forty cases of birth injuries of the shoulder the author arrives at the following conclusions in regard to the pathogenesis of these conditions. "First, that pure nerve lesions occur and may be of much greater importance than any injury of the shoulder-joint, even if this is present; and secondly, that posterior subluxation of the humerus is a frequent lesion often overlooked, and perhaps may be the cause of persistence of paralysis." He considers it not improbable that the nerve lesions in the majority of these cases are terminal and not radicular, and supports this by pointing out that all of the muscles most constantly paralyzed are supplied by nerves which pass very close to the shoulder-joint and are therefore liable to injury; while the muscles which habitually escape paralysis are supplied by nerves which at no part of their course come in close contact with the shoulder-joint or the bones which compose it.

As regards treatment, the author rejects nerve operations in early infancy. His treatment of shoulder injuries where no dislocation is present consists in keeping the hand and arm in front of the body and as soon as the soreness permits, the institution of massage and passive motion. Where dislocation is present, it is advisable to anæsthetize the child at about the age of six months and reduce the dislocation bloodlessly. This may be done by placing the baby prone upon the table with the affected arm hanging over the side, gently rotating the humerus outward by means of the flexed forearm until the latter has been brought into the coronal plane of the patient's body and then applying downward pressure on the head of the humerus. Abduction of the shoulder-joint is then secured by laying the flexed elbow and the child's chest flat on the table and applying intermittent pressure to the posterior part of the shoulder while the elbow is raised by placing folded towels under it. This is continued until the elbow lies well posterior to the frontal plane of the body. The entire upper extremity and chest are then encased in plaster-of-Paris to maintain this position. After six weeks the cast is renewed and again allowed to remain for six weeks.

In patients over four years of age, the open method of reduction is preferable. An incision is made around the acromion which is then osteotomized and turned forward. The insertion of the subscapularis is divided while an assistant endeavors to rotate the arm outward. This makes reduction possible without difficulty. The tendons of the supraspinatus and infraspinatus and teres minor are shortened, the acromion replaced and fixed by sutures in the young or by screws in older patients. Skin closure is made without drainage. A cast is applied, as in the very young, for a total of twelve weeks with one change. After removal of the dressings, active and passive movements are employed. The author has employed this operation in five cases with no recurrences and marked improvement in all.

In older patients where no dislocation is present but marked contractures, it is better to resort to an open operation than to employ a prolonged course of passive movement and gymnastics.

GATEWOOD.

Henderson, M. S.: Recurrent or Habitual Dislocation of the Shoulder. *J. Am. M. Ass.*, 1918, lxx, 1.

Henderson states that dislocations occur more frequently in the shoulder-joint than in any other joint in the body, and that the ease with which reduction is accomplished is proportionate to the length of time the dislocation has been present. If the dislocation is associated with a fracture of the surgical neck of the humerus, unless reduction is

accomplished by an open operation, a resection of the head of the bone is usually necessary later.

Habitual dislocations of the shoulder-joint occur in cases in which reduction has been accomplished and the convalescence completed without incident, so that there is no cause for anxiety. The habit of easy dislocation is a sequela that cannot be foretold. Definite evidence of the pathologic condition in recurrent dislocation is lacking. The limited opportunity for examination of the entire field at the time of operation accounts for much of the difference of opinion. Dislocations are more common in the male than in the female. The disability resulting may be so severe as to prevent the patient from earning a livelihood.

Numerous methods of treatment have been advocated. Henderson recommends the Young operation, which consists in making an incision along the anterior fold of the axilla while the arm is held in abduction, strongly retracting the pectoralis major, and carrying the dissection down to the capsule below the tendon of the subscapsularis. An incision is then made into the capsule and three or four mattress sutures of No. 2 chromic catgut doubled are inserted. It will be found that the overlapping of the capsule may be secured readily by rotating the arm. The wound is closed and the arm is held strapped to the side of the body for two weeks, and abduction to a right angle is not permitted for six weeks.

Young also recommends a plastic operation. This is accomplished by an incision starting a little farther out on the axillary fold and extending a little farther down upon the humerus over the bicipital groove. The tendon of the pectoralis major is exposed and the lower half severed. The latissimus dorsi on the opposite side of the biceps tendon is exposed and the inferior half divided. The arm is then placed in a plaster-of-Paris spica, and is held at right angles to the body for from ten days to two weeks.

Henderson reports eight cases treated by the above methods, in five of which the condition was cured. Two were failures, and at present it is too soon after operation to report the result of the other one. He concludes as follows:

1. Recurrent dislocations of the shoulder may be cured by operation, capsulorrhaphy being the operation of choice.
2. Capsulorrhaphy has been found to be sufficient in the majority of cases.
3. Resection of the head of the humerus is not permissible for this condition.
4. Arthrodesis or ankylosis of the head of the bone to the scapula with the arm at a right angle would be an extreme measure, but permissible.

G. W. Hochrein.

Pain, A.: Dislocation of Both Hips Without Fracture of the Pelvis. *Brit. M. J.*, 1918, i, 16.

A miner, aged 42, when in a stooping position, was knocked down by the fall of a stone. Examination showed his left leg flexed, adducted, and internally rotated, and the right leg flexed, abducted, and externally rotated. Both dislocations were easily reduced under anæsthesia. Usually the dislocation is not the same on both sides.

V. C. Hunt.

Grégoire, R.: Open Gunshot Fractures of the Patella (Les fractures ouvertes de la rotule par projectiles de guerre). *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 1929.

Grégoire quotes the opinions of several distinguished surgeons to show that patellectomy is the rational and necessary treatment of total gunshot patellar fractures. He reports a number of cases to show that patellectomy is not necessary in order to obtain recovery of such a fracture wound.

Grégoire does not think that large opening up of the joint is useful. There are spots which the surgeon cannot reach, and furthermore the knee is able to defend itself if it is aided in freeing itself of the septic fluid, removing the tract where the infecting organisms are disposed, and the projectile which has introduced them.

If it is necessary in the case of the knee-joint to expose all the surface before suture, must suture of the shoulder, wrist, etc., be discarded because it is impossible to explore their entire contour?

The essential point in knee-joint injuries is the drainage of the effusion in the joint. Grégoire confines himself to puncture with a bistoury, introducing it deeply into the joint about 1 cm. behind the patella at the middle point of its internal face. New punctures are made as demanded until the fluid withdrawn is sterile. The details of nine cases so treated are reported. W. A. Brennan.

Besley, F. A.: Value of the Caliper in Obtaining Extension in Compound Fractures of the Femur. *J. Am. M. Ass.*, 1918, lxx, 87.

After stating that the majority of methods of treatment of fractures of the femur are unsatisfactory, Besley says that one faces the problem in war surgery, first, of dealing with the large open wound, and second, the reduction and retention of the fractured bone. The first is the most essential if the patient can be conveyed rapidly to a place where his wound can be adequately treated. The excision of the soft parts should include the skin, superficial fat, fascia, muscles and the loosened fragments of bone. Following this the wound should either be entirely closed immediately or within forty-eight hours, with sutures left loose at the time of operation.

Experience teaches that one is frequently successful in obtaining primary union, but is then confronted with the problem of overcoming the pull of the strong thigh muscles. Besley has seen a large number of compound fractures of the femur which have nearly all been dressed at the front and placed in a Thomas splint and traction applied with adhesive plaster and maintained with a rubber band

attached to the bottom of the splint. The Thomas splint, as it has been modified from time to time, has become one of the most valuable adjuncts in the treatment of fractures with which the author has come in contact. It gives more comfort in transportation and after-treatment than any other method of fixation.

In his early cases there were many serious disasters from secondary hæmorrhage and extending infection, the chief difficulty being in maintaining traction on the distal fragment owing to the fact that the adhesive plaster would become detached and excoriate the skin. After a trial of many different methods, the Steinmann nail extension was begun and a very satisfactory caliper was made out of meat skewers.

Nearly every patient coming to the author's base hospital has been operated upon, the foreign body usually being removed and the wound excised and left open; so that his hospital deals practically with open, infected wounds. Adhesive plaster, if it has been applied, is removed, the knee shaved and the surface of the skin over the condyle cleansed with alcohol and iodine. An incision about one-fourth of an inch long is made over the respective condyles down to the bone, a caliper inserted, and soft tissues pushed slightly upward and backward, the points of the caliper being driven into the bone just proximal and posterior to the most prominent point of the condyle.

He states that there is comparatively no danger in opening the synovial sac of the knee-joint at this point, and says that it is their intention to drive the caliper into the bone about one-fourth of an inch. He has had but one case in which there was any slipping and this occurred when the caliper was not properly constructed.

The fragments are manipulated as soon as possible; the Thomas knee splint is now applied and is bent at the knee, the acuteness of the angle being dependent on the location of the fracture. The knee splint is supported by other supports placed under the thigh and under the leg so that they can be removed for the daily dressing of the wound. The Thomas splint is so adjusted as to be parallel to the anterior surface of the thigh and of the leg. Over the bed of the patient a Balkan frame is placed to which the necessary pulleys are attached for securing the correct and adequate traction, this being always in the direction of the long axis of the thigh, varying, of course, with the amount of bend in the splint and the location of the fracture. About fifteen pounds of weight are applied and the Thomas splint is also swung by means of pulley and weights to the Balkan frame.

D. N. EISENDRATH.

Lord, J. P.: What Is the Best Treatment for Fracture of the Neck of the Femur. *St. Paul M. J.*, 1917, xix, 302.

A considerable number of men are treating cases of fracture of the neck of the femur as they were treated thirty or forty years ago. It is a common history: unrelieved suffering continued week after week, and the only promise that can be held out is so-called fibrous union, inordinate shortening, continued lameness and permanent crippling. Many of these patients die of exhaustion and suffering.

Exact methods and proper fixation will immediately relieve their suffering, and put the surgeon in complete command of the case. With exact methods and absolute fixation, bony union is a result. Operation and direct fixation have so fully demonstrated the possibility of union that other means are now confidently sought to secure the same results without the attendant risk of an operation, expecially in enfeebled, senile patients, or those in the hands of general practitioners, without hospital advantages. Surgeons themselves now seldom practice the open operation, because it is recognized that bony union can be secured by reduction and the maintenance of the fragments in apposition, except in a very small percentage of cases.

The Whitman method is the treatment of choice. The case is in the command of the surgeon from the time the plaster is put on. This seemingly awkward position of abduction is absolutely simple. The case may be turned on its side with the encased limb suspended in air; the patient may be turned over on his face; he may be brought to the edge of the bed and the limb in the cast dropped outside the bed; the patent may sit up and be manipulated at will. There is no danger of disturbing the fracture, therefore there is no pain; and with this freedom of movement, the patient remains in excellent condition.

Bony union does take place in fracture of the neck of the femur if it is early reduced, and if it is continuously maintained in a reduced position. There are no harmful results from employment of the Whitman technique.

Any dressing which does not absolutely fix and retain the fragments, and which requires more or less constant watchfulness and supervision, will not meet the requirements. The same indications in fracture of the hip should be met as in other fractures, namely, correction of the deformity and maintenance of position by an efficient dressing until bony union is complete.

Delitala, F.: Fractures of the Calcaneus Considered with Regard to Their End-Results. (Le fratture del calcagno considerate nei loro esito lontani). *Chir. d. organ. d. mov.*, Bologna, 1917, i, 303.

The author examined the statistics of Brind, Westphal, and Tietze as regards the end-results of fractures of the calcaneus. He finds that there is a resulting unfitness for work in from 30 to 35 per cent of such cases. Methodical early treatment cannot prevent grave functional disturbances, but good treatment can reduce these to a minimum.

Calcaneus fractures must therefore be considered

as grave. They produce an invalidism which on the average is equal to about 30 per cent of the whole body value.

The following points should be taken into account before making a prognosis:

1. The alterations in the soft parts, i.e., atrophy, cutaneous and muscular hypertrophy, etc.
2. Subastragalar rigidity and ankylosis.
3. Crunching and pain during movements.
4. Alterations in the form of the foot.
5. Muscular contraction.

Radiologic examination is important in the study of recent as well as old fractures.

The author thinks that structural modifications of the trabeculæ have only slight importance, contrary to the theoretic point of view. He also thinks that arthritic alterations do not give radiographic signs. Some illustrative cases are reported.

W. A. BRENNAN.

SURGERY OF THE BONES, JOINTS, ETC.

Steindler, A.: Contribution to Volkmann's Contracture. *Am. J. Orthop. Surg.*, 1917, xv, 741.

The author briefly reviews the literature, noting that the etiologic factor has in most instances been attributed to circular constriction of the parts by plaster-of-Paris bandages, splints, etc., producing ischæmia of the muscles, i.e., Volkmann's contracture. The lack of pathologic study in many of the reports on the subject is also noted, the clinical picture and treatment having been principally discussed. Steindler reports the pathologic changes noted, the operations and photographs of five cases treated in the past year.

Photomicrographs are shown and a comparison of traumatic paralysis, infantile paralysis and Volkmann's ischæmic paralysis made.

The author sums up the histologic changes in Volkmann's contracture as an interstitial myositis and secondary changes of the muscle fiber, while in infantile paralysis and peripheral nerve lesions the ensuing changes in muscle seem to be more those of a parenchymatous degeneration and secondary infiltration.

H. W. MEYERDING.

Duvergey, I.: Reconstruction of the Synovial Tendon Sheaths by Grafts of Internal Saphenous Vein (Reconstitution des gaines synoviales par les greffes de veine saphène interne). *Presse méd.*, Par., 1918, p. 14.

A study of 80 war injuries involving interruption of the extensor and flexor tendons of the fingers have shown certain peculiarities to the author.

It is observed that nature makes an effort to repair the damage to the tendons by attempting an anatomic bridging of the tendon ends, utilizing the cicatrix as an intermediary. If physiologic continuity fails to become established, it is because the scar has become adherent on all sides and remains immobile. It is further observed that in a traumatically sectioned tendon, the central end does not usually become retracted but is inserted in the cicatricial block referred to. This differentiates tendon war injuries from those observed in times of peace. Among the 80 cases studied by the author, in only three or four did he find retraction of the central stump. It is probable that in the case of war wounds the section of the tendon is not so absolute as is usually effected by cutting instruments in civil practice, and the presence of some tendon fibers on the intertendinous cicatrices of war wounds testifies to this.

The author bases his reconstruction technique on these facts. He utilizes the intratendinous cicatrix in reconstructing the tendon and he isolates the reconstructed tendon from the surrounding parts to preserve it from fibrous involvement.

No attempt at repair is made until cicatrization is quite complete. The skin scar is then dissected and the central and peripheric ends of the tendon found. A tongue is then cut from the intratendinous fibrous tissue and with this the tendon is reconstructed in its missing part, the remaining scar tissue being cut away. The tendon stumps are denuded until the synovial sheath is found to be healthy. The reconstructed tendon is then sectioned transversely and a piece of the internal saphenous vein, especially removed for the purpose, is slipped first up over one end and then down over the other so that it entirely protects the denuded part. The tendon is then sutured where sectioned and the piece of vein fixed by sutures in a manner which is explained and illustrated in the article.

The results of the procedure are very interesting. Almost all of the patients operated upon, numbering 78, recovered the functions of the organs involved to a greater or less degree when they left the hospital. Only 24 could be traced after a lapse of time, and of these 20 had entirely recovered their functions.

The author considers the results very encouraging, since without operation these patients would have lost the use of one or more fingers. The physiologic reconstruction of the injured tendon is only possible when it is isolated by means of the venous sheath which replaces the synovial tendon sheath and protects it from incorporation with surrounding fibrous tissue and new adhesions.

W. A. BRENNAN.

Swan, R. H. J.: Primary Excision of Gunshot Wounds of the Elbow-Joint. *Brit. M. J.*, 1918, i, 134.

Fagge criticizes the term primary in speaking of an early operation in distinction from a late or secondary operation when healing has occurred and ankylosis has resulted from the sepsis in the joint. The author agrees with him that the word primary should be reserved for those cases which are operated upon in the casualty clearing station in the first few hours after the infliction of the wound.

The author has been impressed with the fact

that if, in suitable cases, excision of the elbow-joint were performed after thorough removal of the wound and infected tissue and the incisions closed, the results obtained would be much better than if operation were performed when sepsis has become established.

The choice of the cases suitable for excision depends chiefly upon the local conditions. Doubtless the removal of a small attached piece of articular surface is enough in slight injuries, but where the whole articular surfaces are much comminuted and the fracture lines do not spread too far into the shaft of the humerus, it seems that immediate excision of the joint gives best results.

Groves would limit early operative treatment to removal of the detached fragments of bone and suggests drainage of septic cases by division of the base of the olecranon with subsequent reattachment to the ulna. The author has abandoned this method. The olecranon can equally well be preserved by reflecting the triceps with the periosteum of the olecranon on each side by a median posterior incision. V. C. HUNT.

Bristow, W. R.: A Note on Muscle Nerve Testing During Operation. *Brit. M. J.*, 1918, i, 8.

If on cutting down upon a nerve, a complete anatomical division is found with an end-bulb on the proximal end and perhaps an inch or more of separation, there is no need to test the electrical conductivity of the nerve. However, the exposed nerve may show a thickened area with no anatomical division, and the question arises as to whether or no there is physiological conduction through this. Here a method of determination should be used.

The relative rapidity of return of voluntary power and of faradic excitability after injury is not constant. If the exposed nerve is stimulated, faradic response in the muscles always precedes the return of voluntary power. The author cites a case as evidence of this fact.

The apparatus for making the test of conductivity consists of a faradic coil, metronome, electrodes and connecting cords which can be sterilized. The only essential of the coil is that it shall yield a sufficiently weak current, so weak that it can just be appreciated when both electrodes are placed on the tongue. If the current is strong, the overflow to the muscles other than those being tested causes general contractions, and renders accurate observations impossible.

The metronome interrupter is the simplest method to adopt in testing. The metal probe is held in contact with the nerve, and at each beat of the metronome the electrical circuit is made or broken. The testing electrode, a long metal probe with a terminal at the end for attaching the connecting wires, consists of two platinum wires insulated in a glass handle.

The cords and connections are all sterilized by boiling. The secondary electrode necessary to complete the circuit is attached to any convenient part away from the field of operation.

The nerve is isolated, a glass rod passed under it and the metal probe placed in contact with the nerve. The core is fully withdrawn, one cell actuates the battery, one layer of secondary is used, and the metronome is started. A normal nerve will be stimulated by this weak current and the muscles supplied by it will contract with each beat of the metronome. If there is no contraction, the current is strengthened by pushing in the core, and if further strength is necessary, by using two layers; any current stronger than this is unnecessary. The testing takes only a minute or two. In stimulating a nerve, as the median, the muscles put into action vary according to the exact part of the circumference of the nerve which is stimulated.

In dealing with incomplete or partial division of a peripheral nerve, it is sometimes necessary to suture part of the nerve and to leave other fibers intact. An exact estimate of the extent of the paralysis is of value. Incomplete lesions are not uncommon in the cords of the brachial plexus and are frequent in the sciatic. V. C. HUNT.

ORTHOPEDICS IN GENERAL

Sever, J. W.: The Value of Diagnosis in Back Lesions. *Boston M. & S. J.*, 1917, clxxvii, 857.

By way of preface, the author states that an adequate diagnosis is necessary both from the standpoint of treatment and from a medicolegal standpoint. The liability of the employer to the employee demands a just consideration of the case.

Practically all cases of back disability, as the author points out, are due to falls from a height, and the resulting injury occurs as a result of severe violence applied through the long axis of the spine or while the spine is forcibly flexed.

The author calls attention to the fact that the subject is to be reviewed with reference to definition, method of production, nature of the accident, diagnosis, prognosis and question of disability.

By a compression fracture, he means one in which the vertebra is crushed or flattened, the portion of bone involved depending upon the direction of the crushing force.

Regarding the nature of the fracture he gives abundant evidence that twice as many occur at the level of the first lumbar vertebra as at any other place. This phenomenon he explains by stating that the center of greatest mobility is at this point and that in this area muscular protection alone is all that is afforded.

Kyphosis may result but is not a constant factor. It is valuable as a means of diagnosis, but it signifies only one thing, namely, destruction or distortion of the vertebral body.

As regards symptoms, many cases are not diagnosed because the complaint is stiffness and pain. Few show more involvement with such symptoms

as incontinence, paralysis, etc. Without doubt this is due to the fact that the spinal cord ends above the most frequent point of fracture, i.e., the first lumbar vertebra. The usual complaint of the patient is that he cannot bend freely. The greatest loss of motion is noticed when he attempts to bend from side to side.

The treatment advocated is adequate fixation of the spine by means first of a plaster cast and then a brace. Operation, the author states, is feasible, but not enough data have been collected to prove that much benefit has resulted. The twelve cases cited seem to prove that sufficient care is not taken in diagnosis.

In conclusion the author states:

1. Compression fractures are common and are due to forced flexion of the spine.
2. There is usually no nerve involvement.
3. The patient complains of a weak, stiff and painful back.
4. A good roentgenogram is necessary for diagnosis.
5. Disability for heavy work is permanent.
6. An individual who complains of soreness or stiffness of the back after a fall should undergo careful examination.

JOHN MITCHELL.

Cyriax, E. F.: The Movements of the Sacro-Iliac Joints. *Edinb. M. J.*, 1917, xix, 370.

To determine the question as to whether or not the sacro-iliac joints have motion, the author submits a series of tests. He feels that sufficient evidence is not found to support the statement by some anatomists that these joints have a rotary and gliding motion. Such motions as they ascribe have resulted from their studies of cadavers and patients under anæsthesia, in both of which cases the joints are in a state of relaxation.

The tests submitted have been tried in normal subjects: during pregnancy; in cases of subluxated ilium; in cases of compensatory movements of the joints.

In the following manner the author supports his contention that the joints under normal conditions have no rotary or gliding movements:

With the patient on his back, the author placed one hand over one anterior superior spine, and the other below the anterior superior spine of the opposite side. By depressing one hand and then the other he attempted to move one ilium downward and the other upward.

With the patient on his side the author grasped the uppermost ilium over the anterior superior spine with one hand and also grasped with the other hand the posterior part of the same ilium, and then attempted to rotate the whole bone.

With the patient in the same position and the hands similarly placed, the author attempted to move the whole ilium upward and downward.

The conclusions reached are as follows:

1. Under normal conditions the sacro-iliac joints permit of no actual rotary or gliding movements.
2. In early life, since the sacro-iliac joints are not firmly fixed, they may permit of a pathological rotation.
3. The presence of actual movements in the sacro-iliac joints points to the presence of pathology.

JOHN MITCHELL.

Henderson, M. S.: The Surgical Treatment of Infantile Paralysis. *St. Paul M. J.*, 1917, xix, 365.

It is the author's desire to consider under this title only standardized operations, their possibilities and usefulness. The treatment, he states, should be so directed that the paralyzed muscles are held in a position of physiologic rest, the position most advantageous for the return of power and the prevention of deformity. Lovett has shown that overwork of a partially paralyzed muscle may delay or even completely prevent the return of power. Carefully graduated exercises and massage undoubtedly conserve and increase the residual muscle power.

Primarily, the author states, it should be realized that the operative measures are palliative and corrective, not curative. The location of the lesion in the anterior horn of the spinal cord precludes the possibility of any logical surgical interference during the acute stages. But there comes a time when the patient ceases to improve under the best direction and treatment by means of braces, massage, and the like. At this stage the operative measures can be well considered.

Neurotization of the paralyzed muscle is attempted by anastomosing a healthy nerve to a paralyzed nerve and by sewing healthy muscle fibers to adjacent paralyzed muscle fibers. These attempts have been clinically unsuccessful. Likewise, the use of silk for artificial ligaments has failed.

The large majority of operations performed for infantile paralysis are necessitated by lack of proper attention, muscle training, massage, and the use of braces.

Tendon transplantation has been resorted to. Operations were performed with no regard to mechanical principles and the results were failures. The question of tendon transplantation must be considered with care. The muscle must be of sufficient strength to carry out the new duties imposed upon it by its transference. In the foot, for example, the author demands before transference of tendons, practically normal power in two of the three muscle groups.

Mechanical principles must be adhered to, and care taken that the transferred tendon perform the function intended. If the peroneals are paralyzed and the tendo achillis and tibialis anticus normal, the foot should first be corrected, if any deformity is present, and the tibialis tendon transferred to the insertion of the peroneal or inserted into the paralyzed tendon near the insertion. The tendon may be split and a portion left in the normal insertion. The extensor proprius hallucis may be utilized to per-

form the work of the tibialis anticus. The biceps or semitendinosus may be transferred into the patella and thus increase the extension power of the knee when the quadriceps is weakened. In the author's experience he has found no value in transference of the peroneals to the inner side of the foot.

Whitman's astragalectomy and Gallie's technique of using the living tendon for a stabilizer are very useful in treatment of certain foot deformities. In certain cases arthrodesis is to be preferred. This should not be attempted in persons below the age of puberty. The social status of the patient should determine the advisability of arthrodesis. For example, when the deltoid is paralyzed but the scapular muscles are working, an ankylosis of the humerus to the scapula at a right angle gives a useful arm.

The conclusions reached by the author are enumerated as follows:

1. Operations for infantile paralysis demand a consideration of the social status, and the careful testing of muscle function.

2. Operative procedures are to be undertaken only after it is certain that power will not return to the paralyzed muscles.

3. The use of silk as artificial ligaments is not advisable.

4. Tendon transference is to be undertaken only when the muscle to be transferred is adapted to perform its new duties.

5. Arthrodesis demands consideration of the extent of the paralysis and the social status of the patient.

JOHN MITCHELL.

Nutter, J. A.: Some Common Foot Conditions and Their Treatment. *Canad. M. Ass. J.*, 1917, vii, 1077.

Foot conditions fall commonly into two classes: first, one in which the foot is mechanically at fault; and secondly, one which is due to some infection. The commonest of the mechanical defects is the involvement of the longitudinal arch. Pain results when too much of the body weight is applied, due to the overstretching of the ligaments, especially the inferior calcaneonavicular ligament. The pain is usually referred along the inner aspect of the ankle and there is tenderness over the scaphoid bone. Pronation of the foot should be looked for and also valgus; pronation, however, being more important.

The recognition of infective processes, such as gonorrhœal arthritis or tuberculous disease, should not be overlooked and in a badly pronated foot the diagnosis may not be simple, as a tuberculous focus in or near the ankle almost always causes a pronated condition of the foot. Strapping the foot in an inverted position generally helps a pronated foot and has not much effect on the pain of rheumatoid or tuberculous disease.

The treatment of rigid foot consists of forcibly inverting the foot and holding it in that position by the use of adhesive plaster or a plaster-of-Paris bandage. This forcible inversion is painful and in most cases must be done under a general anæsthetic; at times considerable force is necessary. Foot plates are indicated when speedy relief from pain is indicated, when the patient will not carry out the necessary instructions as to exercises, etc., in cases of painful heel and in individuals whose weight is too much for the feet to bear.

Plates should not as a rule be used in mild cases of pronation, as strapping the foot and raising the inner border of the shoe is sufficient. As regards rheumatoid disease, the X-ray is of the greatest value, especially in the examination of the teeth. It reveals forgotten stumps or abscess cavities under bridge work, which even a good dentist may overlook.

The author refers to a case where a shortening of the tendo achillis was the forerunner of a degeneration of the spinal cord, followed by extensive paralysis. He also calls attention to the fact that this should be in mind, and the possibility explained to the patient beforehand.

J. J. KURLANDER.

SURGERY OF THE SPINAL COLUMN AND CORD

Beckman, E. H., and Adson, A. W.: Spina Bifida; Its Operative Treatment. *St. Paul M. J.*, 1917, xix, 357.

The authors classify spina bifida with regard to its anatomy and operability. Spina bifida is a true hernia. The designation of the hernia depends upon the structure found: if meninges alone are found in the hernial sac, the hernia is named a meningocele; if nerve fibers or a portion of the cord, a myelomeningocele; if a neural canal, the hernia is a syringomyelocele.

The usual site for such herniæ is where ossification takes place at a late period of development, i.e., cervical and lumbar portions. The cause is not known. The choroid plexus stimulates an excess of cerebrospinal fluid. Therefore the sac is due to an overactivity of the choroid plexus and not to secretion in the hernial sac itself.

Spina bifida lends itself to operative treatment, but the authors state the cases must be selected. No case of spina bifida associated with hydrocephalus is to be operated upon unless an attempt is first made to cure the hydrocephalus. Marked improvement in hydrocephalus has been noted by puncture of the corpus callosum. The authors have had no cases under consideration long enough to

prove that cure has been effected. Nor can cures be promised in cases of paralysis of the lower extremities. When paralysis is present it is due to the fact that some of the nerves or the entire portion of the spinal cord, which should supply the lower extremities and furnish innervation to the pelvis, pass out into the spina bifida sac and terminate there. In such cases also, the authors have failed to find an instance of complete recovery of the use of the extremities after an operation.

Before operation is advised the patient should be examined to determine the possibility of a hydrocephalus, and the absence or amount of paralysis present. A roentgenogram should be required to determine bony defects.

According to the authors the suitable time for operation is from nine months, at which time the child can take other nourishment than milk, to two years, when the increased risk of rupture of the sac is greater. Adults with spina bifida are poor operative risks because the tissue about the hernial sac is infected and macerated.

The following technique of operation is advocated:

The patient is placed upon his abdomen with his head twelve inches lower than the spina bifida sac in order to prevent drainage of the ventricles. The sac is opened longitudinally to expose the opening over the spinal canal and the contents of the sac. A simple meningocele is closed with three rows of chromic catgut. If the spina bifida is a myelomeningocele the nerve fibers are divided close to their exit from the point in the spinal canal and replaced within the canal together with the spinal cord. If the sac contains the cord itself, the opening is closed superficially to the cord structures. The first row of sutures is taken in the dura lining the sac; the second row is taken immediately above the first and catches the fascia external to the dura. Before the third row is placed, the dura covering the sac is divided so that the cut edges are brought together and the fascial plains are approximated over the dura. Then the redundant skin is excised and the skin edges approximated with catgut.

After-treatment consists in keeping the buttocks higher than the head. There is no need to close the bony defect since no great tension is needed.

The following conclusions are stated:

1. Spina bifida is caused by increased cerebrospinal pressure.
2. At the time of operation cases of spina bifida should be free from infection.
3. The most suitable age is from nine months to two years.
4. Paralyses associated with spina bifida remain unchanged.
5. Spina bifida associated with hydrocephalus should not be operated upon until the hydrocephalus has become stationary or pressure is relieved by some operative procedure.
6. Adults are not good risks because of the frequency of necrosis of the skin flaps and meningitis.

JOHN MITCHELL.

Elsberg, C. A.: Fractures of the Spine with Cord and Root Symptoms. *Ann. Surg.*, Phila., 1918, lxvii, 63.

The author states that the indications for operative interference in fractures of the spine with cord and root symptoms depend on the extent of the lesions of the cord.

He states that extreme conservatism is indicated in the patients with the signs and symptoms of a transverse lesion. In cervical and dorsal injuries, with transverse cord symptoms, an operation should never be performed until distinct and definite signs of returning sensation and reflexes give proof that part of the transverse diameter of the cord is intact.

In crushing injuries of the lumbar vertebræ, on the other hand, in which the roots of the cauda equina are affected, a laminectomy should always be performed as soon as shock has been overcome and after an X-ray picture has been taken. There is considerable experimental and clinical evidence to show that regeneration of divided caudal nerves can occur. Therefore injuries of the cauda equina should be subjected to early operative interference, no matter how "complete" the symptoms.

Elsberg states that patients with evidences of an incomplete cord lesion should be operated upon very soon after injury, if the general condition permits, unless the signs of interference with functions are so slight that no justification for surgical therapy exists. The part of the cord that has been irreparably damaged cannot be benefited, but the compression of a partly crushed cord by bone or blood, or by the intramedullary œdema which follows every cord injury, is certain to cause considerable permanent destruction of nerve fibers. The relief of this pressure or œdema by a wide decompressive laminectomy is certain to be of great benefit.

E. C. ROOS.

Finochietto, R.: The Route of Approach to the Lumbo-Iliac Region (Las vias de acceso a la region lumbo-iliaca). *Prensa méd. argent.*, Buenos Aires, 1917, lv, 271.

The author discusses Kock's posterolateral approach to the lumbar vertebral column, which he thinks is only satisfactory when the patient is not very muscular, when the costo-iliac space is not limited, and when the lesions are confined to and situated in the vicinity of the transverse processes.

Mueller's anterior approach is inconvenient on account of the difficulty of drainage.

Finochietto uses a strictly lateral route which gives ample access to the lumbo-iliac region and to the lumbar column with an excellent view of all the organs and perfect command of the situation.

The inconvenience of the costo-iliac space limitation is overcome by means of exaggerated scoliosis of the trunk which is obtained by bending down the patient on the healthy side with the thorax horizontal and the pelvis and lower limb making an angle of about 130 degrees with it.

The costo-iliac space is widely opened. Either the oblique or the angular incisions usually employed to expose the kidney region can be used; but the author prefers the angular, the ascending branch of which uncovers the external part of the sacro-lumbar mass, so as to permit section of the aponeurosis and abdominal muscles.

An accompanying figure shows the method of exposing the vertebral bodies after partial disinsertion of the psoas muscle; it also shows how the transverse process and the lumbar plexus are found by penetrating behind the psoas. In order to expose the intervertebral foramina and the lumbar nerves, it is best to section the psoas transversely layer by layer and double it back on itself outwardly on each sectioned part.

This route gives good access to the second, third and fourth lumbar vertebræ. In order to gain access to the first lumbar, it is necessary to increase the incision on the upper part by cutting through one or two ribs. The fifth lumbar is best approached by the anterior route. W. A. BRENNAN.

Serra, A., and Valtancoli, G.: Statistical Researches on 483 Cases of Scoliosis (Ricerche statistiche su 483 casi di scoliosi). *Chir. di organ. di mov.*, Bologna, 1917, i, 380.

The authors' statistics, besides the usual findings as regards sex, age, etc., had as special objects: (a) the clinicomorphologic classification of all cases of scoliosis examined; (b) the statistical study of the location of the different clinical forms and of their deviations.

The method followed by Schulthess, who studied 1,183 cases, has been adopted by the authors. As regards sex, Schulthess found 85.8 per cent females and 14.2 per cent males. The authors' figures are 82.2 and 17.8 per cent respectively. In the authors' cases 12.9 per cent were total scoliosis. This form is prevalently left-sided. Of 62 cases 53 were left-sided. It is relatively more frequent than other forms in males.

As regards the site, the vertex of curvature is more frequently found on the left side between the ninth and twelfth dorsal vertebræ. On the right side the site is more usually in the region of the ninth and tenth.

The general findings of the authors as regards total scoliosis do not differ very greatly from those of Schulthess.

Lumbar scoliosis formed 14.3 per cent of the authors' cases. It is more prevalent in females than in males in the proportion of 58 to 11. It reaches its maximum about the fourteenth year. In this form also it is more frequent on the left side in the region of the first and second lumbar vertebræ.

Dorsolumbar scoliosis was found in 12.2 per cent of the authors' cases and the proportion as regards sex was 55 females for 4 males. Forty-eight were left-sided, as against 11 right-sided. It reaches its maximum from the twelfth to the fourteenth years.

Dorsocervical scoliosis was found in 2 per cent of the authors' cases. The sex proportion was 9 females to 1 male.

Of the authors' cases 113 were simple dorsal scoliosis; 96 were males and 17 females. It is generally found in the region of the fifth to the seventh dorsal vertebræ and is about equally distributed on both sides of the column.

Complex dorsal scoliosis is the most numerous class; the authors' statistics showed 170 cases or 35.2 per cent; 139 were females and 31 males. There is a notable preference for the right side, i.e., 150 right- and 20 left-sided. The region of choice is that from the fifth to the seventh dorsal vertebræ.

Considering the 790 cases as a whole, 435 were left-sided and 355 right-sided. The right-sided showed a preference for the tract between the fifth and tenth dorsal vertebræ. The left-sided were mostly located between the first and second lumbar and the third and fourth dorsal. W. A. BRENNAN.

SURGERY OF THE NERVOUS SYSTEM

Klausner, R.: Redisposition of the Ulnar Nerve. *Muenchen. med. Wchnschr.*, 1917, lxiv, No. 19.

Klausner refers to the technical difficulties of obtaining an exact and secure reunion by suturing the ends of a sectioned nerve. The conditions in the case of the ulnar nerve are very unfavorable; and Klausner has adopted for such cases a simple method of redisposition of the nerve.

After leaving the internal groove of the biceps on separating from the median, the ulnar runs in the bony duct between the olecranon and internal condyle of the humerus. Owing to its situation it is tense when the elbow-joint is flexed at a right angle. As the nerve does not branch in this third, it can be isolated in the posterior region of the elbow without danger of causing alterations and on separating the fascia which cover the nerve in its bony duct, its isolation is complete.

The nerve can easily be lifted up on its proximal part where it leaves the internal bicipital groove. If the flexor carpi ulnaris is incised, between the fibers of which the nerve runs, the nerve can be freed for a length of ten or twelve cm. Then by flexing the elbow-joint at right angles, the nerve is carried over to the flexor side and a length of 5 cm. gained, which is ample for practicing suture without tension.

Prior to the war Klausner had already practiced

this shifting of the ulnar for a lesion of the epicondyle. There were no inconveniences. He has since practiced it in war hospitals. The method is especially applicable to ulnar lesions in the cubital region; but in higher or lower lesions redisposition of the nerve will result in diminution of tension.

W. A. BRENNAN.

Langley, J. N.: The Separate Suture of Nerves in Nerve-Trunks. *Brit. M. J.*, 1918, i, 45.

The accuracy of apposition of the central and peripheral ends of the several nerve-fibers is a factor determining the degree of recovery from the effects of nerve severance. It is improbable that an exact apposition of corresponding bundles can be made even in a freshly cut nerve, and if a piece has been excised it is certain that exact apposition never occurs. Microscopic examination shows that after suture of the nerve, fibers growing out from the central end of any one bundle usually take a devious course and run to several peripheral bundles. This new arrangement caused by nerve-fibers growing out of their course is spoken of as the distortion of the nerve pattern.

The nerve pattern is distorted both on its efferent and afferent side. On the efferent side the central nerve-cells which formerly in a limb controlled only a flexor muscle may after regeneration control flexor, extensor, adductor, abductor or rotator muscles in various proportions. On the afferent side cutaneous fibers normally giving rise to the different sensations of cold, heat, touch, etc., will run to the muscle and tendon, and muscle and tendon afferent fibers will run to the skin. This necessitates some readjustment of the processes in the central nervous system, in order that reflex and voluntary movement may occur in a properly co-ordinated manner. This takes place quite rapidly in the case of simple movements, but the finer movements are only gradually recovered and the sensory adjustment appears to take a still longer time.

In regeneration after nerve suture there is also a varying degree of loss of innervation by a union of afferent and efferent fibers making a functionless connection.

It has been shown that if after nerve regeneration the nerve be cut above the point of union and the central end of the peripheral branch stimulated, contraction may be obtained in muscles innervated by other branches. This is due to single fibers of the central end dividing into two or more fibers which pass to different peripheral nerves. Such reflected actions occurring in branching axis cylinders the author has called axon reflexes.

The effect of the division of fibers with divergence of the branches will vary according to the nature of the fibers and the nerve-ending, if any, which they make. Thus, when a muscle nerve-fiber divides and makes new nerve-endings in different muscles, a nerve impulse passing down it will cause contraction in both muscles, and when an afferent fiber capable of giving rise to sensation divides and makes new nerve-endings in different regions, one must suppose that a stimulation of either region will give rise to a sensation referred to both.

From the above facts it may be concluded that any procedure which reduces disturbance of the nerve pattern will make recovery more complete, and will shorten the time taken in attaining that degree of recovery which is possible in the circumstances. It is obvious that if each peripheral nerve ran a separate course in the nerve-trunk and these were sutured separately, the distortion of a nerve pattern would be much diminished; however, in the larger nerve-trunks the bundles exchange nerve-fibers and form a plexus which may be spoken of as the internal nerve plexus. It would seem, then, that in the larger nerve-trunks no separation of the nerves for the different muscles and for different cutaneous areas is possible. Some observers, however, have mapped out the nerve bundles of the trunk of the sciatic into anterior tibial, musculocutaneous, posterior tibial, gastrocnemius and other nerve bundles, and if true, there exists the possibility of suturing the nerves separately in the sciatic.

Hashimoto and the author investigated this possibility and found that the only peripheral nerves having more than a short isolated course in the sciatic were those to the hamstring muscles, the nerve to the short head of the biceps, the lateral cutaneous and external saphenous nerves, the nerve to the outer head of the gastrocnemius and that to the inner head of the soleus. All the others soon after joining the sciatic became connected with the internal nerve plexus and are mixed with nerve-fibers of varied peripheral distribution. The most accessible nerves are the cutaneous nerves.

The nerves to the inner and outer head of the gastrocnemius after they join the sciatic run an isolated course for about one and a half inches.

Most of the muscle nerves arise close together from the internal nerve plexus and run a variable but short distance in the trunk. In the comparatively rare cases of clean severence and immediate operation it is not outside possibility to distinguish the respective central and peripheral ends of one or more of the muscle nerves and suture them separately.

All isolation of nerves causes some interference with blood supply in the isolated portions which may delay regeneration if the inner dense sheath has to be opened.

V. C. HUNT.

Ingebrigsten, R.: A Case of Autoplastic Nerve Graft (Un cas de greffe nerveuse autoplastique.) *Lyon chirurg.*, 1917, xiv, 884.

In previous experimental work the author arrived at the conclusion that a loss of substance in a peripheral nerve may be successfully bridged by an autoplastic transplantation. In most cases, however, the two ends of the nerve can be liberated and joined by direct suture.

Thus the sciatic and ulnar nerves have been

sutured when the two ends were separated from 4 to 5 cm. In the radial, a loss of 7 or 8 cm. has been bridged in this way. In 40 operations on peripheral nerves the author was obliged to resort to grafts in only 4 cases. One of these cases is described.

A soldier was wounded in the elbow and the joint was resected. Fourteen months later he showed symptoms of neuritis of the ulnar nerve. Liberation of the nerve was followed by improvement for a few months and a second liberation gave a much shorter improvement. A resection of 4 cm. of the nerve was then done, followed by an autograft sutured into the gap. For three months the patient seemed well, but pain then re-appeared and it was necessary to remove the upper part of the graft with part of the nerve.

Histological examination of the removed piece showed that the cicatrization with delay in nerve regeneration was due to considerable alteration in the superior end of the ulna. The effects were not due to any inflammatory lesion.

The author thinks that the failure of such transplantations ought not to discourage further similar attempts. This case was unfavorable owing to the preceding operations and the existing neuritis.

W. A. BRENNAN.

MISCELLANEOUS

CLINICAL ENTITIES—TUMORS, ULCERS, ABSCESSES, ETC.

Crotti, A.: Cancer. *Ohio St. M. J.*, 1918, xiv, 19.

Cancer is a local disease, always starting in some one spot. It arises after long-continued irritation of various kinds in and about benign growths or ulcerations. These conditions are known as precancerous conditions. For instance, cancer of the lip and mouth arises from pipe smoking, bad teeth, etc.; external cancer from burns, moles, warts, etc.; cancer of the stomach from gastric ulcer; cancer of the gall-bladder from gall-stones; cancer of the uterus from neglected ulcerations or lacerations; cancer of the breast from neglected sores, cracks, and especially from lumps that were at first benign.

The removal of a precancerous condition prevents cancer from developing. Hence it is the duty of every physician to advise the removal of every precancerous condition, especially if there are any signs of changes taking place in it. The safest way is to remove any precancerous condition while it is still quiescent.

Pain is never present in early cancer. When pain is present, it is too late for a radical cure. The first warnings of cancer do not differ from warnings of diseases that are not cancerous; this accounts for the fact that early cancers are so often overlooked.

There is no such thing as "hæmorrhage" of the menopause. Every hæmorrhage is pathologic and may be caused by cancer. Examine the patient first and prescribe afterward. Any patient in whom a discharge of blood occurs after the menopause may be suspected of malignancy of the uterus, and should be operated upon.

Any lump in the breast which begins to enlarge, harden, and to lose its sharp limits is becoming malignant.

In a patient over thirty-five years old, any persistent indigestion must be regarded with suspicion. In any bleeding of the rectum, the presence of cancer should be eliminated first before treating for bleeding hæmorrhoids.

In patients over thirty years of age, any goiter growing rapidly and becoming harder in consistency should arouse suspicion of malignancy. When that goiter has become adherent to the neighboring tissues, it is too late for a cure to be accomplished.

In patients of middle age, any blood in the urine must be considered as of cancerous origin until proved otherwise. An examination should be made.

P. G. SKILLERN, JR.

Forsell, G.: Statistical Results of Radiotherapy in Cancer (Statistique des résultats obtenus par la radiumtherapie du cancer). *Arch d'électric méd.*, Par., 1917, xxv, 567.

Forsell finds carcinomata less sensitive to radium than sarcomata. He has treated 69 cases of skin cancer. Fifty of these were cured, 8 improved, and 5 discontinued treatment. In 15 cases of lip carcinoma, 9 were cured. The oldest of these cures dates back two and one-half years. The 6 others are still undergoing treatment and show progressive improvement.

Of 138 other cases of cancer treated, in 126 cases the treatment was brought to a satisfactory end. Six recoveries were obtained, but 2 of these cases were treated by radium after surgical resection. Forty cases were considered permanently and 35 cases temporarily improved.

Fifty-one cases of mammary cancer were treated; 3 did not continue treatment; in 44 cases there were recurrences after operation. One case was cured and 33 improved; in 14 cases there was no result. In 24 roentgen and radium therapy were combined.

In 37 cases of cervical uterine cancer, 7 discontinued treatment, 2 were cured; 12 were considerably improved. There was no result in 13.

There were 30 cases of sarcoma. One case discontinued treatment. In 10 cases there was complete disappearance of the tumor, 2 of these after surgical extirpation; 6 of the cases were inoperable and the disappearance of the tumor in such cases under radium or combined treatment is an eminent success. In 6 cases there has been progressive im-

provement. In 8 cases improvement was followed by aggravation or death. Of the 29 treated cases, at least four-fifths have received substantial benefit.

The author treated 92 cases of benign tumor. Complete disappearance was observed in 37, and progressive improvement in 51 cases.

The author followed the technique of Wickham and Degrais. W. A. BRENNAN.

Yamagiwa, K., and Ichikawa, K.: Experimental Study of the Pathogenesis of Carcinoma. *J. Cancer Research*, 1918, iii, 1.

Papillomatous new-growths, which the authors term folliculo-epitheliomata, may be produced on the rabbit's ear by the application of coal tar for from thirty to one hundred days. By the repeated application of the coal tar, 8 cases of carcinoma in its earliest stage, 16 in an early stage, and 7 complete carcinomata were produced. The carcinomatous change was observed between the 55th and the 360th day. The authors found that the repetition or continuation of chronic irritation may cause a precancerous alteration in epithelium previously normal. If the irritant continues its action, carcinoma may be the outcome, even though no specific agent has been interpolated.

MAX KAHN.

Roffo, A. H.: Cultivation in Vitro of Spindle-Celled Sarcomata (Cultivo in vitro de celulas de sarcoma fuso celular). *Prensa méd. argent.*, Buenos Aires, 1917, iv, 251.

Roffo's investigations and experiments in the culture of spindle-celled sarcomata were complementary to those already made for the purpose of determining if such cells can live apart from the organism besides increasing or diminishing their vegetative power.

The experiments gave these results:

1. It is possible to cultivate spindle-celled sarcomata of rats *in vitro* in the same conditions as cells of normal tissues.

2. These cells gradually acquire their morphologic differentiation until they reach the fusiform type.

The article is illustrated by a large number of microphotographs. W. A BRENNAN.

Davis, J. S.: The Use of the Relaxation Incision in Dealing with Extensive Unstable Scars. *J. Am. M. Ass.*, 1917, lxix, 2085.

The treatment of tightly stretched unstable scars which often follow deep burns or extensive loss of tissue from other cause by incisions to release the scar tension is advised and has been practiced with success by the author.

These scars have little resistance to trauma and infection and frequently undergo repeated ulceration. By the use of relaxation incisions with immediate or subsequent skin-grafting of the defects, large unstable scars can be strongly healed in a comparatively short time and superficial ulcers healed with great rapidity.

It is preferable but not necessary to have the area entirely healed. Unhealed cases are treated till healthy granulations are present, then dressed for twenty-four hours with normal salt solution and the surrounding scar and skin cleaned with alcohol and ether. Local or general anæsthesia, as fits the case, may be used.

On the extremities longitudinal incisions are made down to the deep fascia, two or three sufficing. The incisions gap from two and one-half to three inches, and this new raw surface is usually immediately skin-grafted by one of the various methods. In cases of long standing with marked subcutaneous atrophy, skin-grafting should be deferred until the nutrition is restored following the relaxation. If the scar is stretched over a bone, as the skull, multiple incisions may be necessary and should be made down to periosteum, and some under-cutting may be necessary.

With the release of scar tension thus obtained, in addition to rapid but permanent healing of ulcerations, one notes in a few days instead of the thin glossy mottled tissue a thickened resilient area.

K. L. VEHE.

Rouhier: Treatment of the Untransportable Wounded in a State of Shock (Note à propos du traitement des grands intransportables en état de shock. *Bull. et mém. Soc. de chir. de Par.*, 1917, xliii, 2169.

From his observations Rouhier finds that in abdominal wounds immediate shock is rare and is connected with hæmorrhage. Secondary shock is frequent and is generally coincident with manifest infection. Shock therefore as regards the abdomen is not an entity but a symptom like fever, diarrhœa or tympanites; it is a primary or early or late secondary complication of wounds; it manifests itself essentially by arterial hypotension.

The etiology of shock is sometimes simple and sometimes complex; but however complex the clinical picture may become as the case progresses, and no matter what the symptomatology at the beginning may have been, the result always gives the same picture.

The most rational method of classifying shock is according to the predominating or to the probable cause. Abdominal cases show that the following kinds may be distinguished:

1. Nervous shock, rare in abdominal cases, frequent in cranial and thoracic and consequently in thoraco-abdominal cases.
2. Hæmorrhagic shock.
3. Shock due to cold and fatigue.
4. Shock due to infection.
5. Complex shock in which all the elements are joined to a greater or less degree.

However, outside this category there is another variety commonly observed in cases with multiple wounds. This variety of shock does not depend

either on the nervous state or on hæmorrhage, nor is it due especially to cold. It depends on the nature of the wounds and on the contusions and crushing of the tissues. Some of the factors noted above no doubt contribute, but it can exist without them, and it is at once the most terrible of the traumatic complications and for which treatment is inadequate.

This kind of shock can be distinguished from the hæmorrhagic, nervous, and septic varieties. The syndrome is not immediate, as in nervous shock, nor secondary as in septic shock; it is primary as in hæmorrhagic shock but there is no loss of blood. What is its pathogenesis? The author seems to accept the view that it is a shock due to toxæmia, that the traumatized area is the site of absorption of albuminoid and fatty matters which have been set free by the crushing of the tissues, the gaping veins favoring resorption. He thinks that it is reasonable to suppose that substances of this kind penetrating into the circulation cause phenomena of general intoxication and that the nervous system in its turn becomes involved.

This viewpoint of the pathogenesis is not merely theoretical. There are cases observed in which after an amputation there has been a rapid recovery from marked shock. There are at least five cases of evident shock in Rouhier's observations, in which after amputation of the arm the condition of the patient became transformed after the first day as if a toxic source had been suppressed. Tuffier and others have noted the same thing.

Cases of shock by toxæmia may be divided into two classes: those in which a limb is so shattered that there is no hope of preserving it, and in this case the conclusion of the Interallied Surgical Conference was that immediate amputation was indicated; in the other class of cases the traumatic area cannot be immediately and completely removed and as the aggravation of the general state by surgical intervention is not compensated by the complete suppression of the toxic source, expectant treatment would appear to be the wiser course.

In his advanced station on the firing line Rouhier handled 190 untransportable cases. Ninety died and 100 were discharged in good condition. Of the 90 who died, 43 were operated upon and 47 were not operated upon. Of the 100 evacuated, 91 were operated upon and 9 not operated upon. Of the total 134 cases operated upon, 110 were for hæmorrhage. There were 28 immediate amputations or disarticulations, 5 of them double; of these 22 recovered.

Rouhier directs special attention to the immediate application of the hæmostatic bandage, either when the wounded man is picked up on the battlefield, or at the first aid post. W. A. BRENNAN.

Peabody, F. W.: A Report on the Treatment of Myelogenous Leukæmia with Radium. *Boston M. & S. J.*, 1917, clxxvii, 873.

This study is based on the treatment of 36 cases of myelogenous leukæmia treated at the Huntington Hospital during the last five years. Nineteen of these patients have died, the others are being more or less actively followed. An attempt is made to keep them under constant supervision, as this is considered an important factor in their care.

One of the most striking results obtained was the general clinical improvement. The spleen underwent a rapid decrease in size, the extent varying in different cases. There was also a marked change in the blood picture, the number of white cells in cases which had received no previous similar treatment beginning to fall in from 24 to 72 hours after the radium was applied and continuing to decrease for days or even weeks after discontinuance of the irradiation. The differential count is also modified, myelocytes becoming less prominent. Patients with an anæmia, who respond well to treatment, usually show a rise in hæmoglobin and red cell count. The development of an anæmia in a case under observation is to be regarded as a serious sign. It may be the result of too much radiation. A remission of the leucocytosis usually occurs after a few weeks, when more radium must be applied. In general there is a close parallelism between the leucocyte count and the clinical condition. The white count is the best routine guide to treatment, and attempts should be made to keep it within normal limits.

Regarding technique, with one exception where a few applications were made over the long bones, all the cases were treated over the spleen in the French manner and as described by Ordway. Recent results have seemed to indicate that the administration of one or several large treatments, followed by an intermission of at least several weeks until all evidence of radium action has ceased, is more satisfactory than the use of smaller doses at more frequent intervals. The author is not prepared to say whether the length of life in the cases treated has been prolonged, but temporary remissions of the disease were assuredly produced and patients restored to a useful and functionally efficient existence.

ADOLPH HARTUNG.

Kronberg, G.: A Prognostic Reaction of Urine. *Deutsche med. Wchnschr.*, 1917, No. 24.

Kronberg experimented to find a reaction of urine which would not show special functional or metabolic disturbances but would give an index of the general condition. He found iodine the best agent for this, owing to its great activity and its affinity for the many organic products of metabolism.

For prognostic purposes the iodine is combined with a coloring matter, triphenyl methane (gentian violet and methyl violet), the use of which with iodine and absolute alcohol constitutes the basis of the gram colorative reaction. The iodine solution contains: pure iodine, 1 part; iodide of potassium, 2 parts; distilled water, 200 parts.

In a test tube of 25 ccm. are mixed: 1 ccm. of the iodine solution; 10 ccm. of filtered urine; 1 ccm. of solution of gentian violet; 10 ccm. of absolute alcohol. The mixture is well shaken.

With normal urine or in cases with a favorable prognosis the reaction gives a clear violet azure color of the mixture.

In pathologic cases with an unfavorable prognosis, the color of the mixture is cloudy, varying from a reddish violet to a dark carmine, according to the gravity of the disease and the degree of deficiency of resistance in the organism.

The author says that his method has much wider application and better general prognostic value than the diazo or permanganate, etc., reactions.

W. A. BRENNAN.

Thom, B. P.: Syphilis and Malignancy. *Am. J. Syphilis*, 1918, ii, 40.

In this article the author desires to call attention to the following facts which he has endeavored to substantiate by typical and convincing examples.

(1) Syphilis predisposes to malignant disease. (2) The most malignant forms of syphilis and cancer may exist side by side, the so-called juxtasyphilitic carcinoma or epithelioma. (3) In a syphilitic patient developing cancer, there is almost certain to be a local outbreak of the luetic disease, in close proximity to the malignant growth. (4) In an individual with cancer who contracts syphilis, the malignant disease is stimulated to increased activity. (5) Leucoplacia occurring in syphilitics, especially if tobacco is used to excess, almost invariably causes development of cancer of the mouth or tongue. (6) Epithelioma or carcinoma may develop on a gumma, the two lesions merging, as it were. (7) Syphilis may exactly simulate cancer in any location, either of the viscera or on the surface of the body.

E. C. ROBITSHEK.

Symmers, D.: The Cause of Sudden Death in Status Lymphaticus. *Am. J. Dis. Child.*, 1917, xiv, 463.

Sudden death in status lymphaticus may be brought about in at least two different ways. The first and most frequent cause is of the nature of an anaphylactic reaction due to sensitization of the body by a specific nucleoprotein formed in the lymph nodes as the result of necrosis of numbers of germinal follicles. Before the so-called anaphylactic incubation period has expired, the tissues are again subjected to the action of the same protein formed in the same type of tissue in response to an apparently trivial injury and, in this way, the anaphylactic reaction is completed.

A second cause of sudden death in status lymphaticus is to be found in the form of spontaneous rupture of a hypoplastic cerebral vessel, or rupture following apparently trivial injury, the deficiency in the vessel wall being most noticeable in the muscular coat.

EDWARD L. CORNELL.

Arlitt, A. H., and Wells, H. G.: The Effect of Alcohol on the Reproductive Tissues. *J. Exp. Med.*, 1917, xxvi, 769.

That alcohol may produce distinct anatomical changes in the testicles of those who use it in excess has been observed from time to time by pathologists for many years, and yet this fact does not seem to be widely known or generally taken into account in considering the effects of alcoholism. In a series of rats given alcohol for varying periods of time to determine the effect of alcohol on the psychology of their offspring, the effect of chronic alcoholism was observed. Altogether the authors examined 15 male rats thus treated, 6 male rats of the second generation derived from them, 18 male rats of the third generation, and 8 male rats of the fourth generation. Approximately the same number of females was also studied. From each animal, with a few exceptions, the following organs were studied: lung, liver, kidney, spleen, stomach, heart, and sex glands. The animals were all killed, while in apparent health, with illuminating gas. They were all of about the same age, six to nine months, except in the case of two which were thirteen months old. All had been fed and cared for under identical conditions except for the administration of alcohol admixed with the food in quantities of from 0.25 ccm. to 2.25 ccm. per day for periods varying from two to ten months. The effect of the alcohol on the rats was, except for those fed for very long periods, to lessen the learning capacity in almost direct proportion to the amount of the dose and duration of the period of administration.

The effect on the body weight was also marked. Animals receiving 2.25 ccm. per diem rate either gained weight far more slowly than the normal animals, or, in some instances, actually lost weight though in the growing period. As regards the offspring, the observed physical effects were, in the case of the offspring of rats receiving 0.5 ccm., a decrease in size and lessened fertility. This was accompanied by a marked decrease in learning capacity. The offspring of animals receiving 0.25 ccm. showed no marked physical changes and were as to intelligent behavior generally on a par with, if not actually superior to, the offspring of normal animals.

The microscopic changes in all structures except the sex glands may be summarized briefly. Nearly all showed more or less pulmonary infection of the type common in rats, consisting in the less advanced stages of a chronic bronchitis with much cellular infiltration and hyperplasia of the bronchial walls. Many showed extension of the process to the adjacent alveoli with a frank mucopurulent bronchopneumonia. The degree of this change seemed to have little effect on the conditions in the other organs and bore no relation whatever to the changes observed in the sex glands.

Only the testicles showed definite changes, but here the effects were so marked and so nearly constant that they stand out conspicuously as the result of the alcohol feeding. Of the fifteen male rats treated with alcohol, the testicles of not more than two or three rats failed to show noteworthy changes, and only one could be called normal. Several different types of changes were observed, and one that attracted attention at once was an apparent decrease

in the size of the seminiferous tubules, and in several instances a distinct decrease in the size of the testicle itself. Measurements were made of the tubules in the testicles from thirty-seven rats, twenty-five tubules being measured from each testicle to secure adequate representation, and then the average diameter calculated. These measurements show at once that there was a distinct decrease in the size of the seminal tubules of the rats that had received alcohol, although in a few rats this change was not present.

The results may be summarized as follows:

Administration of alcohol in the food of male white rats for two or more months, in daily quantities of 0.25 to 2.25 ccm., resulted almost constantly in the appearance of marked degenerative alterations in the testicles. These changes affected the steps of spermatogenesis in inverse order to their occurrence, so that for some time before sterility and complete aspermia the animal was producing spermatozoa with all possible degrees of abnormality and deficiency. The possible relation of this abnormal spermatogenesis to the production of defective offspring was obvious. Individual rats showed marked differences in the degree of change produced by equal amounts of alcohol. The fibrous, interstitial and vascular elements of the testicle were not affected, except for intertubular œdema compensating for tubular atrophy. These experimental observations harmonized with the necropsy findings in human alcoholics. No other tissue was found to be noticeably affected by the alcohol; especially to be remarked was the absence of cirrhosis or fatty infiltration in the liver. GEORGE E. BEILBY.

SERA, VACCINES, AND FERMENTS

Petersen, W. F.: Serum Changes Following Protein "Shock Therapy." *Arch. Int. Med.*, 1917, xx, 716.

The author believes that it is at present justifiable to consider that the benefits of shock therapy do not depend on any single alteration in the reacting organism, but on a series of factors in which not only the serum antibody and ferment changes, but the leucocytosis, the fever and sweating, and the increased lymph flow have a part, along with the important cellular changes which are as yet intangible. MAX KAHN.

Bartlett, C. J., and O'Shansky, A. L.: A Modified Wassermann Technique Based upon the Rapid Fixation of Complement Present in Human Serum. *J. Lab. & Clin. Med.*, 1917, iii, 118.

A modified Hecht-Gradwohl method is recommended by the authors, who do not suggest that this method supersede the original Wassermann technique, but who advise parallel determinations by this method and by the old Wassermann technique. The method seems to be an improvement on the Gradwohl modification of the Hecht-Weinberg procedure. MAX KAHN.

BLOOD

Hartman, F. W.: Pathological Study of Splenic Anæmia. *U. S. Naval M. Bull.*, 1918, xii, 13.

The author reports a very interesting case of splenic anæmia which went undiagnosed for almost three years; during this time the patient was operated upon for cholecystitis, ventral hernia, and underwent treatment for typhoid fever and liver abscess. His complaint was weakness, pains in the stomach, loss of appetite, and diarrhœa. The temperature rose in the afternoon to 103° F. at times. The patient was emaciated, and his complexion had a yellowish tint. Liver dullness extended from the third interspace to 4 cm. below the costal margin. The spleen was easily palpated, and extended 7 cm. below the costal margin during inspiration. There was a moderate grade of anæmia; red blood count was 4,000,000; white blood count, 4,000 to 4,600. There was a relative lymphocytosis; myelocytes showed 1 per cent. On X-ray examination there was a remarkable shadow thrown by the spleen.

A splenectomy was done. Twenty-four hours afterwards the polymorphonuclears were increased from 64 to 80 per cent and the lymphocytes decreased from 23 per cent to 11 per cent. White blood count was 12,500.

The spleen was five times the normal size. Sections showed a thickened capsule, and large blood spaces walled by comparatively thick fibrous tissue. The picture was one of hyperplasia of the reticulum at the expense of the lymphoid elements.

Two and one-half months after the operation the patient had gained 20 pounds, all the symptoms had disappeared, and the blood picture was improved. There is increasing eosinophilia, 9 per cent, with continued leucocytosis, which are the usual blood changes following splenectomy. C. A. BOWERS.

Reuben, M. S.: Gaucher's Disease. *N. Y. M. J.*, 1918, cvii, 118.

The author reports in full his second case of Gaucher's disease in a child two years of age; the diagnosis in both instances was made previous to the operation. In this second case splenectomy had been advised but had not as yet been carried out.

The case is fully reported and physical findings carefully noted. A splenic puncture was made, the smears of which showed characteristic endothelial cells. The history of a sister four years old, who also has an enlarged liver and spleen, is given.

Reuben concludes by giving a careful review of the historical aspect, etiology, pathology, symptomatology, and course of the disease.

E. C. ROBITSHEK.

Kerley, C. G.: The Treatment of Secondary Anæmia in Infants by Blood Transfusion. *Am. J. Dis. Child.*, 1917, xiv, 470.

The results in all but one patient were satisfactory. This patient was transfused twice and in

each instance there was improvement as shown by the blood examination, but it failed to hold longer than a few weeks. This child made a gain in weight, but the general improvement was not satisfactory. The abdomen was greatly distended, not unlike Hirschsprung's disease. In the other cases there was no return of the anæmia and subsequent growth and development was all that could be hoped for.

A table shows the weight increase and the blood findings before and after transfusion, but it cannot record the marked change in the patients, the change from sickly, fretful infants into happy, apparently well infants. The patients were transformed from those with a digestive capacity barely able to maintain existence into those that took on the normal constructive processes of early life.

EDWARD L. CORNELL.

Marris, H. F.: The Treatment of Thrombosis. *Brit. M. J.*, 1917, ii, 822.

Venous thrombosis as it occurs in typhoid and paratyphoid prolongs convalescence and is followed by swelling of the limb and varicose veins. Marris believes from his experience in seventeen cases that a 0.5 per cent sodium citrate solution quickly arrests the thrombosis of the femoral and iliac veins which is such an unwelcome complication.

In a series of cases treated by giving the sodium citrate by the intravenous route, the average number of days from the onset of thrombosis to evacuation was thirty days, while in those in which the solution was given by mouth, it was thirty-nine days. In the series of seven cases treated by the intravenous method five were evacuated as walking and two as sitting cases and in only one was there œdema present on discharge. In the oral series of ten cases, only five were evacuated as walking and three sitting cases, while two had to be sent to England as stretcher cases, and in no fewer than five cases there was a considerable amount of œdema present as discharge.

The theory upon which the treatment is based is that the sodium citrate aids in dissolving the coagulation of the blood.

D. N. EISENDRATH.

Lee, R. I.: A Simple and Rapid Method for the Selection of Suitable Donors for Transfusion by the Determination of Blood Groups. *Brit. M. J.*, 1917, ii, 684.

The numerous blood transfusions which are being done at the war zone have brought out practical lessons which are applicable in civil practice. Lee points out a safe method for such practice. The blood group of an individual follows the mendelian law. Using the arbitrary classification of four groups, it is found that 8 per cent of individuals fall in Group 1; nearly 40 per cent in Group 2; 10 per cent in Group 3; 42 per cent in Group 4.

It is not necessary that the donor and recipient be in the same group. It is important only that the serum of the patient or recipient does not agglutinate or hæmolyze the red corpuscles of the donor. The reason for this is that in the ordinary transfusion one adds from the donor only about one-fifth to one-twelfth of the total blood volume of the patient. The donor's serum is therefore diluted to prevent its acting in a detrimental way. The patient's blood-cells are also shown to be amply protected by his own serum. Consequently, any transfusion between groups is permissible and harmless, provided the patient's serum does not agglutinate and hæmolyze the donor's red corpuscles, although the donor's serum in the test may agglutinate and hæmolyze the patient's red corpuscles.

The author submits a table demonstrating the interrelationship of the different blood groups.

	Serum of Group			
	1	2	3	4
Cells of Group 1	−	+	+	+
Cells of Group 2	o	−	+	+
Cells of Group 3	o	+	−	+
Cells of Group 4	o	o	o	−

+= Agglutination and hæmolysis.
o= No agglutination and hæmolysis.

Group 1 can receive blood from any donor, because the serum of Group 1 will neither hæmolyze nor agglutinate the red cells of any group. On the other hand, the cells of Group 1 are agglutinated and hæmolyzed by all other serums except that of Group 1, its own group. Fortunately, this group is small. A Group 1 patient is therefore known as the universal recipient. In contrast to Group 1 is Group 4, the largest group, whose cells are agglutinated and hæmolyzed by no group, but whose serum will agglutinate and hæmolyze the red corpuscles of all other groups. Group 4 is known as the universal donor group, since the blood of Group 4 can be transfused with safety into any patient. Furthermore, if the patient belongs to Group 4, he can only receive the blood of the same group.

It has been found that persons within the same group vary greatly in the potency of the agglutinating and hæmolytic power of their serums. Thus a cross-transfusion may result in an immediate fatality in one instance, in complete destruction of the red blood-corpuscles, hæmoglobinuria, and marked jaundice but not death in another, and in only mild symptoms in the third patient. The minimum procedure without elaborate tests consists in the establishment of the fact that the patient's serum does not agglutinate the donor's cells.

A rapid test can be made upon a slide, in which the serum of the patient is tested against the red cells of the donor.

Supplies of serums of known groups are kept on hand ready for use. These known persons or test persons can act as a supply to the known serums. The routine method as described by the author, practiced at the army base hospital, is as follows:

With the serums of Group 2, 3, and 4 a number of donors are tested and their names and groups are posted in the operating room. In the event of adequate time, the patient's blood is also grouped, in order to use up the donors of groups other than 4. However, in the case of an emergency no further

tests are necessary. A donor from Group 4 is taken and transfusion immediately performed. This has been found of great help, since patients are brought in who have suffered a great loss of blood, and without further delay a transfusion can be accomplished with a Group 4 donor's blood.

M. A. BERNSTEIN.

Unger, L. J.: Transfusion and Unmodified Blood; an Analysis of 165 Cases. *J. Am. M. Ass.*, 1917, lxix, 2159.

The article presents an analysis of the effects of transfusion on various clinical conditions, a comparison between the use of modified and unmodified blood, and a summary of the results of transfusions in 165 cases.

The indications for transfusion as stated by the author are: (1) hæmorrhage; (2) diseases of the blood; (3) toxæmias; (4) infections; (5) shock; and (6) general debility. Five cases of gastric or duodenal ulcer received blood for hæmorrhage. Hæmorrhage was checked in all but one case. Two cases of typhoid fever with intestinal hæmorrhage were transfused; one case had no further hæmorrhage, the other subsequently died from profuse hæmorrhage. Four cases of postoperative hæmorrhage were transfused, all with very striking improvement and recovery.

Abnormal mental states due to anæmia vanish when the hæmoglobin and the number of red cells is increased. Three desperate cases of ectopic gestation were so benefited by transfusion that they were successfully operated upon. Transfusions for profuse uterine hæmorrhage were done in three cases, all of which recovered. Repeated transfusions were performed on three patients with ulcerative colitis; all showed marked clinical improvement and two began to respond to local treatment which had previously been ineffective. Of twenty-three transfusions given to check hæmorrhage accompaning blood diseases, eighteen were successful.

The following diseases of the blood were treated by transfusion: secondary anæmia, pernicious anæmia, hæmophilia, purpura hæmorrhagica, leukæmia, bleeding of the newborn, Banti's disease, von Jaksch's anæmia and Henoch's purpura. The effect of the transfusions in these cases is summarized as follows:

In pernicious anæmia transfusion should be recommended, but can be expected to produce remissions in only about half of the cases; in hæmophilia it will stop the hæmorrhage but will not affect the course of the disease; in purpura only one-third of the patients recovered; in acute leukæmia it is of but temporary benefit; in bleeding of the newborn it is a specific and life-saving in character.

Transfusions were performed in the following groups of toxæmia: pneumonia, pyogenic infections, coal gas poisoning, morphine poisoning, uræmia, scurvy, and toxæmia of pregnancy. Four children with extreme toxæmia from bronchopneumonia recovered after transfusion. Four cases with extreme toxæmia following pyogenic infection died. One case of coal gas poisoning was transfused when moribund and died. Transfusions for uræmia were unsuccessful. One case of scurvy showed immediate and marked improvement. One case of profound toxæmia of pregnancy recovered.

Of five patients transfused for localized pyogenic infections with intractable suppurative processes, three were greatly improved and went on to recovery. Ten cases of bacteræmia following various conditions all received temporary benefit, which was followed by death. The author suggests the use of immune donors in this class of cases.

Three patients were transfused for shock, one traumatic, two postoperative in origin. Two received marked benefit which led to the recovery of the patient.

Six patients with carcinoma, considered very poor operative risks, were transfused preliminary to operation. Four survived the operations and two died. Debilitating conditions, such as interstitial nephritis, acute parenchymatous nephritis and cirrhosis of the liver, were improved by transfusion.

The technique used by the author is that previously described by him and consists in two Record syringes and an instrument for automatically shunting the blood from the donor to the recipient by means of a stop-cock. Ether vapor is sprayed upon the blood syringe to prevent clotting and saline is constantly introduced through the blood cannula while it is not in use. The author is firm in his conviction that unmodified is superior to citrated blood for purposes of transfusion. The question is still undecided, however, and he admits that in acute hæmorrhage citrated blood may be equally efficacious.

The conclusions reached by the author based upon 165 transfusions upon 128 patients are as follows:

The most striking results of transfusion are seen in hæmorrhage, diseases of the blood, toxæmias and shock. In pernicious anæmia remissions can be imitated; if no remission occurs, transfusion should be repeated with a different donor. The results in toxæmia associated with acute infections are encouraging. If employed at the onset of shock, the symptoms will be overcome.

Transfusion assists in overcoming intractable suppurative processes and causes a marked increase in the vitality of the patient. It is not successful in the treatment of bacteræmia. It is useful as a pre-operative measure to improve the patient's condition. It will prolong the life of patients suffering from debilitating diseases.

The syringe cannula method has proved a simple, efficient, and dependable one for giving whole unmodified blood, which is preferable to citrated blood when blood is required as a tissue. Citrated blood will serve as a substitute to replenish impoverished circulation.

ELLIS FISCHEL.

BLOOD AND LYMPH VESSELS

Sinclair, T.: Ligation of the Innominate Artery for Traumatic Aneurism of the Carotid. *J. Roy. Army. M. Corps.*, Lond., 1917, xxix, 721.

The aneurism in the case reported filled up the space between the clavicle and the upper border of the thyroid cartilage, extending across to the line of the common carotid of the left side and overhanging the subclavian on the right. It measured approximately 4½ by 4 inches.

The artery was exposed by a rectangular incision in the midline and along the clavicle. On detaching the sternal head and part of the clavicular head of the sternomastoid and partially dividing the sternohyoid and sternothyroid muscles, it was found that no space was available between the clavicle and the aneurism. One and one-fourth inches of this bone were therefore resected. The inferior thyroid veins and the larger veins were retracted without damage. The innominate artery was found behind the middle of the manubrium; on tracing this, it became apparent that the common carotid was so incorporated in the aneurism that the placing of a ligature upon it was impracticable, and therefore the innominate was tied with a single strand of No. 4 catgut. The placing of a distal ligature was omitted in this instance, as the effects were considered dangerous.

The postoperative course was uneventful and the patient was discharged in less than a month. Later examination showed no cerebral deterioration and the mental functions were normal. The aneurism disappeared. Circulation and sensation in the hand were good but there was some feebleness and stiffness in the fingers.

The secondary hæmorrhage, septic complications, embolism and cerebral ischæmic softening which may occur in such cases were not observed in this case. The innominate has been infrequently ligated, not only on account of anatomical reasons, but also on account of the feared cerebral complications.

W. A. Brennan.

POISONS

Dudley, D. G.: Successful Treatment of Anthrax by Various Methods. *J. Am. M. Ass.*, 1918, lxx, 15.

In treatment by excision, as soon as the diagnosis is made, the skin is scrubbed gently with soap and rinsed thoroughly with sterile water. The skin is painted with aqueous 8 per cent phenol solution or stronger, and rinsed with alcohol. Next the lesion is painted with collodion to avoid contamination of the incision. Eight per cent phenol is injected into the tissues all around the lesion to wall off the infective process. From three to five syringefuls of solution, about 60 ccm., will be sufficient. One-fourth of an inch outside this phenolized zone five or six syringefuls of 25 per cent alcohol are injected. These injections are usually made within one and one-half inches of the center of the lesion. The line of incision is painted with 8 per cent phenol and an area from two and one-half to three and one-half inches in diameter is excised. After the excision, the base and edges of the wound are painted with pure phenol and immediately neutralized with absolute alcohol. The surface is cleansed with alcohol and a wet dressing applied. The author has used boric acid, 20 per cent alcohol, and hypertonic saline solution. Ordinarily this terminates the case.

When excision fails, the injection of three or four syringefuls of 8 per cent phenol into the œdematous zone may effect a cure. If not, the tissues are incised freely, the course of the œdema being followed, and gauze drains are put in. Phenol is injected into the tissues, due regard being paid to its toxicity, and an ice bag is applied.

At this time anti-anthrax serum should be used. The author uses the serum furnished by the United States Bureau of Animal Industry, Washington, D. C. The first dose is 35 ccm. injected intravenously, followed within from eight to sixteen hours by a second dose, given intramuscularly or intravenously. This dose is repeated if necessary. The only cases of chills or fever that the author has ever seen in connection with anthrax occurred following this injection.

In conjunction with this treatment, salts in full doses should be given, strychnine, one-thirtieth of a grain, every four or five hours. The patient should have plenty of fresh air and should keep quiet. A tracheotomy tube should be kept handy in case the œdema reaches the larynx.

Two cases are reported. Edward L. Cornell.

Vernoni, G.: Recurrent Tetanus of War Wounds (Sul tetano recidivante da ferito di guerra). *Gazz. d. osp. e d. clin.*, Milano, 1917, xxxviii, 955.

The author reports 4 cases of recurrent tetanus in war wounds. The history of the cases shows that the germs of tetanus remaining encapsulated within a wound which is apparently cured are dangerous, and may at any moment, independently of any new traumatism or secondary surgical intervention, recommence to proliferate, causing fresh attacks of tetanus.

The cases reported further show that not only massage but even the simple action of solar light or simple muscular exercise, which of themselves are quite mild as traumatic factors, can in certain circumstances transform an old focus into a new source of infection of the organism.

All 4 cases reported recovered.

W. A. Brennan.

EXPERIMENTAL SURGERY AND SURGICAL ANATOMY

Fiolle, J., and Delmas, I.: Wide Exposure of the Vascular Trunks in the Buttock Region (La déconverte large des tronc vasculaires de la fesse). *Presse méd.*, Par., 1917, p. 709.

The authors refer to the operative difficulty of exposing the vessels in the buttock region. This

difficulty is due to three principal causes: (1) The vessels are deeply situated under the thick mass of the gluteus maximus; (2) the classical incisions, which differ according to the artery, are very insufficient; (3) there is not one, but three vascular groups, and it is impossible to know, when the region is distended with blood, which is the injured trunk.

The route of access in this region must be such as to give plenty of light; this is essential to a correct operation, whether ligature or the treatment of an aneurism. All vessels should be exposed, and the nerves also, especially the sciatic, because an injury by the bistoury or the bite of a forceps will cause unfortunate consequences.

The gluteus maximus muscle is the great obstacle to wide exposures. The authors have devised a technique which overcomes this obstacle and which calls for no muscular section. The patient lies on the abdomen, the side to be operated upon being slightly raised. The thigh is raised and a slight external rotation movement given which relaxes the gluteal muscles. The posterosuperior iliac spine, the iliac crest and the great trochanter are located by palpation and outlined very carefully.

The incision begins in the middle of the external face of the great trochanter about three finger-widths below its superior border; it ascends vertically toward the superior border, passes it and continuing vertically about 2 cm. higher, it then bends and proceeds upward and inward in the direction of the posterosuperior iliac spine, at 2 cm. from which it stops. Underneath is the aponeurosis which hides the great trochanter, and the thick fat tissue which covers the muscles. This fat is incised, following the trend of the fibers of the gluteus maximus until the aponeurosis is reached.

The vessels are situated between the gluteus maximus behind and the gluteus medius, the pyramidal, the internus obturator and the gemellus in front. This space is filled with loose cellular tissue. In order to find this layer, begin at the base of the incision and cut the aponeurosis vertically on the external face of the great trochanter and a little above it. The index finger is then introduced into the aponeurotic opening and the contour of the great trochanter felt and followed toward its posterior face. It will penetrate under the gluteus maximus muscle and the finger can be pushed even to the sacrosciatic notch.

The posterior aponeurotic lip is raised with two forceps and the external edge of the gluteus maximus found. In this edge are united the posterior aponeurosis of the muscle and that which covers its deep face, the union being marked by a whitish line in the gluteus medius. Scissors are introduced and the tissues cut along this line. The tissue here is thin and no muscle fascia is injured. The section is continued as far as the iliac crest. The gluteus maximus is detached along all its external edge. It is easily raised up, exposing all the deep muscles and the superficial branches of the gluteal vessels. The muscle is drawn inward and backward by a wide flat retractor and a complete view is obtained not alone of the gluteal but also of the pyramidal, the obturator and the gemellus, as well as the great and small sciatic nerves, the ischiatic vessels and the branches of the gluteal vessels. A little higher up under the bony arch the two gluteal branches unite in the main trunk of the gluteal artery itself.

The vascular operation desired can then be done. In closing the wound, the drains should be placed above the great trochanter and kept clear of the sciatic nerve. W. A. BRENNAN.

ROENTGENOLOGY

Coues, W. P.: Skeletal Radiography as an Aid to the Diagnosis of Obscure Syphilis. *Am. J. Syphilis*, 1918, ii, 97.

Following a brief review of the literature of the bone lesions of syphilis, with which a bibliography is given, Coues states that, through the use of skeletal radiography, many bones show the characteristic appearance of specific inflammatory processes without any manifest symptoms, i.e., silent skeletal syphilis. It has been found, moreover, that in individuals without specific history these characteristic changes were at times present.

Further study of this subject has demonstrated that certain individuals, ailing for years with obscure chronic conditions in which definite diagnoses could not be made, showed definite specific changes in certain bones, which gave the key to an otherwise blind and baffling condition. In these cases a definite history of syphilis seemed entirely lacking, but when an exhaustive history was taken by one with an adequate knowledge of the more obscure signs of syphilis, extremely suggestive facts were noted.

Coues believes that the Wassermann reaction is a mixed blessing in diagnosis and that perhaps twenty per cent of all syphilitics give a negative reaction. If skeletal radiography were used in conjunction with serologic tests, and the findings passed upon by competent observers, the number of syphilitics in a given community would be very much augmented.

Obscure swellings in the neck, supposed to be tuberculous, and leg ulcerations supposed to be varicose, have had their correct etiology demonstrated by skeletal radiography, the Wassermann reaction being oftener negative than positive. In a number of cases the diagnosis has been further confirmed by the examination of tissue and the therapeutic test. This point should be borne in mind in delayed or fibrous union of fractures and the ulceration or delayed healing of wounds.

To pass judgment in a suspected case, experience and long study are necessary. Differences of bone structure which are normal must not be interpreted as specific, and other abnormal bone conditions must be differentiated. The fibula, for instance, having many surfaces, is more difficult to judge by than the tibia, but characteristic proliferations on

its surface are detected as often as on the tibia. The use of skeletal radiography should be more common, and in conjunction with the Wassermann reaction it will give very accurate data as to the presence of syphilis. DAVID R. BOWEN.

HOSPITAL, MEDICOLEGAL, AND MEDICAL EDUCATION

Goodwin, H. C.: The Hospital; a Teaching Institution. *Albany M. Ann.*, 1918, xxxix, 1.

The author sums up the following advantages of a teaching hospital: first, to the patients, because of the complete equipment such a plant provides; second, to the attending men who must keep to the front or be superseded; third, to the internes who are fortunate enough to secure an appointment; fourth, to the student body which is allowed the freedom of the hospital; fifth, to the training school for nurses, which always has before it the examples of well-trained men doing careful work; sixth, to the surrounding community which, as a result, has a higher standard of practicing physicians in its midst; seventh, to the physicians in the surrounding country, who are able to see in consultation the best men in their respective specialties; eighth, to science, because in the teaching hospital new therapeutic and diagnostic methods can be studied by means of the trained clinicians and laboratory workers; this cannot be done in a non-teaching hospital since the latter has neither the properly qualified staff nor the equipment.

In other words, the advantages to the community are so great that all should unite in its common support and no institution of this character ought to be embarrassed for a single moment by lack of funds. The wealthy men of this country and the foundations created by their wealth are realizing that efficiency in hospital work is as necessary as it is in a manufacturing business, and that the lowest per capita cost does not always mean the best managed institution. Waste in everything should be discouraged, but money spent in teaching and study is potential energy being stored up for future use and is the best kind of preparedness for a community.

The organization of a teaching hospital cannot be loose or haphazard. The board of managers must be keen men, interested in the large affairs of life, and public-spirited enough to devote much of their time to the proper fulfillment of the trust imposed upon them.

The best method of organization is for the university to maintain its own hospital; then the control is always certain and the wards will ever be freely open to the teaching force. As this is not always possible, the arrangement of interlocking boards or agreements should be made, but in such a way as to insure permanency.

The superintendent and the principal of the nurses' training school should have been trained under the methods in vogue in teaching hospitals so that they will readily grasp the point of view and needs of the teaching force, whether it be in the way of material to work with or of nurses to supervise special work and departments. This means that the superintendent of such an institution should be a physician who has enjoyed the widest opportunities himself, for it cannot be supposed that a man whose training has been along other lines can develop the understanding and sympathy necessary for the proper administration of a hospital in conjunction with a medical school. The administrator who fails to take advantage of every opportunity for conferences with the professors or heads of the different teaching departments will soon find that he is not in touch with the aims and cannot see the whole picture of which each department is a part.

The staff should have a continuous appointment and should be appointed only when holding the same position in the university.

No hospital should attempt to affiliate with a university medical college as a teaching institution whose finances are in a poor condition.

The physical condition of the plant should be so arranged that there are enough wards for each department. Adjacent to the wards should be small clinical laboratories fitted up completely for the routine work and under the supervision of a technician specially trained for this work. In addition to small clinical laboratories, there should be the larger laboratories for physiological chemistry, bacteriology, pathology, roentgenology, electrocardiography, etc., as well as the operating rooms to accommodate the different specialists.

The dispensary should be modern and absolutely under the control of the same departments in the medical school. Here also should be laboratories so equipped that certain clinical diagnosis work can be undertaken. If the laboratories are not near at hand, students fail to see the relation between physical diagnosis and laboratory work. Here, as in the hospital wards, the student body of the third-year classes should assist in dispensary routine and study the different cases under proper supervision. There should be rooms enough so that they can work either singly or in groups of two in preparing the histories, physical examinations and suggestions for treatment of patients who come to the clinic.

The autopsy room should be well equipped and under the control of the pathologist. This is the place where the mistakes of diagnosis are clearly shown and where the student can see for himself what he has been more or less surmising while following the case in the wards. In no other place can gross pathological conditions be so thoroughly impressed on the student mind.

There should be a library and record room in which are kept the standard books and periodicals and the completed records of cases treated in the institution, with desk room enough to encourage the students and internes to use them. The records

should be accessible by carefully kept card indexes. These indexes should be as follows: a name index and a disease index compiled after some standard classification and properly cross-indexed for complications, etc. The case records should contain in detail a complete history of the case before admission, physical examination and notes during the hospital stay, together with all the data from the different laboratories. EDWARD L. CORNELL.

Wynne, S. W.: The Need of Standardizing the Statistics of Child-Caring Institutions, Foundling Asylums, Etc. *Arch. Pediat.*, 1918, xxxiv, 939.

The adoption of a uniform method or system of recording and tabulating the statistics of child-caring institutions is of primary importance, and efforts should be directed toward this end.

Briefly, the system is as follows: At the termination by recovery or death of each case of illness occurring among the children under charge, the institutions forward to the Central Bureau of Records a report or certificate giving the important statistical data. In the Division of Statistical Research the information contained in these reports is coded and transferred to what are known as "punch cards." From the punch cards the desired tabulations are prepared with the aid of a Powers electrical sorter and counter.

The advantages of such a system are: first, uniformity; second, economy; third, absolute accuracy; fourth, preservation of the original data in such form that it is always readily accessible, so that special studies or reports can be prepared promptly and economically. EDWARD L. CORNELL.

MILITARY SURGERY

NOTE.— Readers are referred to the Table of Contents for other articles dealing with military surgery which appear under the various headings according to our anatomical arrangement.

Mayo, C. H.: Medical Service in the United States Army. *St. Paul M. J.*, 1917, xix, 351.

The author reviews some of the records of former wars to prove that inefficient and insufficient medical care accounted for most of the deaths, and he refers with pride to the splendid medical record of the present war.

Reference is also made to the present low rank of medical officers, which should be elevated. He calls attention to the tuberculosis situation during and after the war. A plea is made for the careful apportioning of the medical service of the country, so that the civilian population may not suffer too serious neglect. H. H. FREILICH.

Heiser, V. G.: Some Accomplishments of Italian Medical Men in the War. *J. Am. M. Ass.*, 1918, lxx, 24.

Italy has a standing army now of approximately 4,000,000 men and has 1,000,000 hospital beds. The equipment for these many beds has been derived practically altogether from Italy herself. The care of the sick and wounded is divided between the Army Medical Service and the Red Cross of Italy. The wounded are relayed back from the firing line to the base in practically the same manner as in the other allied armies.

The Army Medical Service has erected where necessary one story pavilions, 14 feet high, 18 feet wide, and of any necessary length, built of iron and hollow tiling; while the Red Cross hospital accommodations are mainly in converted hotels, schools, etc. Hospitals are being located nearer and nearer the front as it is deemed advisable to risk the occasional danger from shells in view of the great advantages of early treatment. Many of these hospitals are in dugouts thirty to forty feet underground; others in the mountains are hewn out of solid rock, practically on the first firing line.

Specialization has been carried out to a high degree. Large re-educational institutions have been established. The foundation of huge quarantine stations, both back of the front line in northern Italy and also in the south to take care of the men returning from the east, marks an important achievement. These stations have accommodations for thousands of men, have large sterilization and disinfecting outfits and maintain efficient laboratories where routine stool tests for cholera, typhoid and dysentery, and blood tests for malaria are made.

The laboratories have done much to keep down the morbidity rate of the above mentioned diseases. About 5,000 cases of tuberculosis are said to have appeared in the army; the venereal incidence is small. During the period of inactivity in the winter months a medical school has been established in northern Italy for students released from the trenches. R. B. BETTMAN.

Lower, W. E.: The Application of Military Surgery to Civil Practice. *Ohio St. J. Med.*, 1917, xiii, 810.

The exigencies of cases in time of war develop a resourcefulness and simplicity of action that can be copied in civil practice. One of the accomplishments of tremendous importance obtained in military practice is blood transfusion in the treatment of hæmorrhage. The experience obtained in a few months cannot be acquired in years of civil practice.

The author calls attention to the use of the Thomas splint in fractures of the femur. No other treatment practiced in this war stands out so conspicuously and satisfactorily nor is more universally applied. The splint used is a standard, unmodified Thomas splint. It can be quickly adjusted over the

clothing and extension applied to the limb so that patients can be transported any distance in comparative comfort. The author recommends the placing of this splint in factories and shops as part of an emergency equipment.

Permanent extension is applied either with adhesive plaster or Sinclair glue, consisting of glue solid 49 per cent, calcium chloride 1 per cent, aquæ 50 per cent; this glue must be warm when applied.

The ring of the splint must get its support from the tuberosity of the ischium and not press tightly against the perineum. Sufficient support must also be given above and below the seat of fracture. This is provided by perforated zinc cradles, or by bandage supports, extending in a hammock fashion across the frame. Extension is preferably made from above the knee, but if an external wound will not permit the application of such an extension, it can be made from below the knee.

For cases in which there is much deformity and overlapping, and in which the ordinary extension is not sufficient, extension by a rubber band to the frame is very satisfactory. This rubber should be of sufficient elasticity and strong enough to overcome the muscle pull. The continual pull of the rubber band takes up the slack as soon as the muscle has been tired out and holds the fragment in position. It also prevents the spasmodic action which often occurs at night from the muscles pulling the fragments past one another, which produces the great pain accompanying such an occurrence.

M. A. Bernstein.

Peat, G. B.: The Effects of Gassing as Seen at a Casualty Clearing Station. *Canad. M. Ass. J.*, 1918, viii, 17.

Of 65 cases entering the casualty clearing station, two were dead on arrival and three died before any remedial agents could be employed. Of the rest, 15 were cases in bad condition, 25 severe, and 20 fairly mild.

An officer badly gassed was restless, almost convulsive. There was marked dyspnœa; respiration was 64; the chest was full of moist râles. Pulse was 128, and of good quality. The skin was pale and the finger nails of leaden hue. He was treated with atropine, gr. 1:75, and morphine, gr. 1:6 hypodermically, and given inhalations of aromatic spirits of ammonia and oxygen inhalations every hour for fifteen minutes. Hydrogen peroxide, one half drachm to an ounce of water, was administered every hour. Oxygen up to four liters was given subcutaneously in the pectoral region. When improvement set in he was given potassium iodide to loosen secretions. This man was back on duty after two months.

Of the group admitted, four died during the night and the following morning. The very grave cases, in addition to the treatment already described, received camphor in oil caffeine and digitalin, gr. 1:100 hypodermically. One of this group died.

Nearly all cases complained of tightness in the throat and lungs. There was a cough in 60 per cent of the cases. Respiration was increased in most cases. Cyanosis was present. Nausea and vomiting occurred in most cases, and there was obstinate constipation. The mental symptoms varied from pronounced restlessness to a dazed or sleepy condition.

Indications in treatment are outlined as follows:

1. Get oxygen into the system.
2. Keep the patient quiet.
3. Relieve the heart and keep it supported.
4. Relieve the lungs and rid them of secretions and detritus.

I. E. Bishkow.

Reports of the Interallied Surgical Conference for the Study of War Wounds. *Arch. de méd. et pharm. mil.*, Par, 1917, lxviii, 105, 141, 180, 400, 465.

LABORATORY METHODS

The Interallied Surgical Conference at its meeting May 14 to 19, 1917, heard reports on the scope, methods, and value of bacteriologic laboratories in connection with war surgery by Leishmann, Govaerts, Renaux, and Veillon. The Conference adopted the following conclusions:

1. In every important surgical unit, there should be an experienced bacteriologist, a doctor having under his direction assistants sufficiently instructed and capable of conducting the various steps in laboratory work.

2. The treatment of war wounds calls for collaboration of the surgeon and the bacteriologist. The latter should be in direct contact with the wounded and he ought to study and discuss with the surgeon the researches necessary and the course to follow.

3. The researches to be made are generally of the bacteriologic, cytologic and serologic order.

4. These researches should not be circumscribed to a narrow limit. They should consider: (a) the bacteriologic state of the wounds in the initial phase; (b) wounds before and after surgical treatment, and before and after a removal to a long distance; (c) wounds which continue to suppurate, or which show any complication; (d) sterilization of the wounds, in view of suture; (e) bacteriologic and biologic control of wounds in order to estimate the degree of effectiveness of the different methods of treatment; (f) examination of the blood by culture, quantitative and qualitative counts, coagulability, defensive properties, and possible indications for transfusion; (g) special infections of joints, serosa, connective tissue, muscles, cerebral matter, and cerebrospinal fluid; (h) general indications for and application of vaccine therapy.

5. In regard to those laboratories now attached to surgical units for the practical work of surgery, it is desired that more laboratories should be created for scientific research and for the study of general questions of war surgery, or at least that those which already exist should be given over to this end as far as possible.

GASEOUS GANGRENE

The Conference took up the consideration of reports by Sacquépée, Testi, Govaerts, Veillon,

Makins, Derache and Duval, and came to the following conclusions regarding the gaseous gangrene of war wounds:

1. Pathogenesis. There are two sets of causes which favor the development of gas gangrene; one general and the other individual. General causes may be (a) geographical variations; the frequency and clinical type of gaseous gangrene seems partly subordinated to geographical circumstances; (b) the kind of projectile; artillery projectiles or grenade fragments produce the most dangerous wounds.

Regarding individual causes, a certain number of peculiarities are almost constantly found in wounds which tend toward gangrene. The most important are: (a) situation of the wound in the fleshy part of a limb, especially the lower limb; (b) special disposition of wounds, i.e., a narrow orifice with important deep lesions; (c) the presence of foreign bodies, especially fragments of clothing, bringing with them particles from the soil containing fæcal matter; (d) extensive contusion of tissues with partial necrosis.

Other favoring circumstances, although not constant, are very frequent, such as large bone or joint ruptures; ischæmia consecutive to vascular lesions, ligatures, or hæmostatic bandage; multiplicity of wounds; hæmatoma; true traumatic shock. The chances of gangrene are much less if effective and complete surgical treatment is done very early; even after a suitable operation, the appearance of gangrene is favored by early evacuation of the wounded or by using an insufficient treatment, especially after the use of dressings which allow wounds to become dry. Attention is drawn to certain intoxicating factors in gangrene, namely, local or general acidosis.

2. Bacteriology. Research has confirmed the infectious origin of gaseous gangrene and the anaerobic nature of the microbes which cause it. Among the microbes met with are the septic vibrion, bacillus belloneusis (the exact relation between bacillus belloneusis and bacillus œdematiens is still doubtful), and bacillus perfringens. Infection is often aggravated by the addition of other microbes, especially the streptococcus.

Following the general principles of bacteriology, investigations have been made with a view to obtaining sera active against the above named microbes, anticipating their use in serotherapy; such sera have been prepared and their action demonstrated in animal experiments.

3. Treatment of gaseous gangrene. Gaseous gangrene is very frequently the consequence of delay or insufficiency in the surgical treatment of wounds. Prophylactic treatment is the most important. It comprises the rapid evacuation of the wounded to a surgical center where they can receive the necessary care; wide stripping of the wounds; excision of contused or dead tissue; removal of foreign bodies; careful hæmostasis.

In localized forms, with or without infiltration, the curative treatment consists of (a) completely exposing the deep tissues to the air; (b) excising all gangrenous or suspected tissue; (c) making longitudinal incisions in the zone of infiltration to the limit of this zone.

Amputation is indicated in early massive gangrene, especially if complicated with severe osseous or vascular lesions; also in the rapidly invading forms with a generally disturbed condition; rapid fall of blood-pressure is in this case a most valuable sign. The method of choice is that named plane section. When the amputation is in healthy tissue, British surgeons recommend short skin-flaps fixed in eversion. When the amputation is in an infiltrated zone, the infiltrated zone of the stump ought to be freed by means of incisions extending high on the root of the limb or trunk.

Nitrous oxide-oxygen anæsthesia should be that of choice; failing this, ether should be used. In case of extraction of projectiles or secondary or late operations, it must be remembered that this may cause a re-awakening of gaseous gangrene.

FRACTURES

The papers by Tanton, Nigrisoli, Moynihan, Tuffier, Dos Santos, Derache, Veillon and Arbuthnot Lane on the fracture wounds of war were discussed and the following conclusions adopted:

1. Choice of apparatus. In treating a diaphyseal war fracture, reduction is the method of choice.

The method of immobilization may include: (a) temporary immobilization at the first aid station; (b) definite immobilization at the surgical center; (c) immobilization during transport.

Temporary immobilization should as far as possible approach the definite type and should permit transportation.

Prolonged immobilization should provide for mechanical extension, easy access to the wound, and evacuation of the patient.

2. Arm fractures require (a) temporary immobilization at the first aid post. The Thomas splints and crutch apparatus give excellent results, and their general adoption in the army is desirable; (b) prolonged immobilization. The above-mentioned apparatus or splints which permit abduction of the limb are indicated.

3. Fractures of the forearm require (a) temporary immobilization at the first aid station. A metallic grooved apparatus with the elbow at right angles or a simple wooden splint are sufficient; (b) prolonged immobilization. The forearm should be immobilized in supination, and the apparatus should as far as possible permit application of mechanical extension and variable degrees of elbow flexion. The Thomas and Sinclair apparatus, the interrupted metallic splint plaster apparatus, or Van de Valde's splint fulfil these indications.

4. Fractures of the thigh require (a) temporary immobilization at the first aid post. The best apparatus is the Thomas type. It is well to add to the original splint a foot-piece in order to avoid the heel being pushed frontward while resting on the

stretcher; (b) prolonged immobilization. The apparatus selected should permit abduction and flexion of the limb, i.e., the Thomas splint, the suspension apparatus of the Anglo-American type, Delbet's or Alquier's apparatus. Delbet's apparatus allows very early walking.

The multiplicity, the situation, the extent of the lesions of the lower limb and intolerance for any apparatus authorize the employment of Finochietto's stirrup. Addition of a splint of the Thomas type to this stirrup allows transportation of the patient while preserving extension.

5. Fractures of the leg require (a) temporary immobilization at the first aid station. The Thomas type splint, the metallic gutter splint, or wooden splints fulfil indications; (b) prolonged immobilization. The apparatus of choice should permit application of mechanical extension. Plaster apparatus combined with metallic extensible splints and movable posterior splints, extension apparatus with suspension, and the Thomas splint fulfil the indications.

It is advantageous to begin walking as soon as possible. The best apparatus which permits this is Delbet's. If the situation of a wound demands it a metallic bridge splint should be substituted for the plaster splint. Finochietto's stirrup either alone or associated with a Thomas splint has the same indications in leg fractures as in thigh fractures.

6. Wrist fractures require (a) temporary immobilization at the first aid post. A metallic gutter or a wood splint provides sufficient immobilization; (b) prolonged immobilization. Jones' splint is an excellent apparatus.

7. Instep fractures require (a) temporary immobilization at the first aid post. A metallic gutter splint suffices; (b) prolonged immobilization. An interrupted plaster apparatus will also serve as a walking apparatus. The Jones metallic splint is equally good. When transporting the wounded, if the apparatus must be removed, a plaster apparatus should be substituted.

Regarding the surgical treatment of fractures, at the first aid station the treatment of fractures comprises: (a) dressing of the wound; (b) immobilization; (c) immediate treatment of complications such as hæmorrhage, shock, etc. Immobilization of the limb should be obtained provisionally.

At the first surgical center all fractures should be examined, submitted to radiology, and operated upon if necessary. Crushed limbs and gangrenous segments should be amputated as far as possible in the fracture area.

Seton bullet wounds with small entry and exit orifices without intermediate swellings and without lesions of the important vessels should be immobilized in a Thomas splint, a gutter splint, or in plaster. The wound should be treated aseptically. The patient should be supervised for at least a week, and if well characterized local or general symptoms develop, the fracture should be operated upon.

All other fractures should be operated upon.

The wound should be stripped by an incision large enough to permit deep exploration of the whole fracture area, with excision of the soft parts and extraction of the foreign bodies.

Treatment of the bony lesion should provide careful removal of free bone chips and those which are only held by a very narrow bridge and are thrown into the muscle parts. Resection should be free and subperiosteal. The irregular jagged bone extremities which menace the blood-vessels and nerves are regularized by the bone forceps. The lavage fluid is left to the choice of the surgeon. Ether and Dakin's fluid are preferred by most.

The wounds should afterward be treated by primary or secondary suture. At the present time immediate suture of the soft parts is done only exceptionally and in the following cases: by the experimenting surgeon; during a military lull and with satisfactory facilities; in wounds less than eight hours old; where the bone and muscle injuries are not extensive, even after excision of all contused tissue; when resected areas are easily closed up; where there is the possibility of supervising the patient until complete recovery. The most favorable regions are the face, cranium, flat bones, hand, and foot. At the first symptoms the sutures should be opened and the wound disinfected.

Secondary suture should be preceded by sterilization. Carrel's and Morrison's methods give good results.

Fracture cases should not be evacuated during the period of infection. Reduction is obtained by operation and controlled by radiologic examination. Certain fractures rebellious to any reduction will be advantageously maintained by osteosynthesis. This intervention ought to be practiced as far as possible after sterilization of the fracture area.

Uniformity in the treatment of severe fractures in the different units improves the conditions of treatment.

Mobilization of joints, muscles and tendons of the fractured limb is called for during the whole treatment and ought to commence as early as possible.

BRAIN WOUNDS

Reports on war wounds of the brain were submitted and the following conclusions were adopted:

1. At the first aid post brain wounds are covered with a simple aseptic dressing.

2. Men with cranial and cerebral wounds are evacuated according to the apparent severity of their injuries: (a) as rapidly as possible in cases of large losses of substance with severe general disturbances; (b) if the lesion seems less serious, if the general state is not so menacing, the patient will be evacuated to a hospital center in which there is a specialist surgeon and neurologist and where he can remain for a long time. Operation ought to be early.

3. A man with a brain wound ought not to be evacuated before three weeks after trepanation for a craniocerebral injury.

4. The cranium should be examined radiologically and projectiles and bone fragments carefully searched for.

5. It is still a matter of discussion whether there is an indication for trepanation when a cranial fracture is not manifest, and when no cerebral symptom exists.

6. Local anæsthesia for operation is the method of choice. A sitting position has the advantage that it diminishes hæmorrhage, and is especially applicable in secondary and late operations.

7. Opening up the wound is done by resection of its edges. Its enlargement is effected according to the situation, the direction and the form of the bone lesions..

8. Loss of bone substance will be enlarged by the bone forceps, exceptionally by a trepan, never by the chisel and mallet, up to the limits of the cerebral contusion.

9. If the dura mater is intact, it will be respected; and in favorable cases the wound will be united by first intention. If it is jagged, the edges will be trimmed and the orifice enlarged to the size of the area of the cerebral lesion.

10. Clots and cerebral exudates, as well as superficial foreign bodies, will be cleared away by a jet of warm physiologic saline solution; deep bone chips and projectiles easily accessible will be removed under the strictest precautions.

11. Very small projectiles deeply embedded and not easily accessible, more voluminous projectiles situated at the base of the cranium or in the ventricles, and those which are situated in the hemisphere of the side opposite the lesions should be primarily respected.

12. In bipolar wounds, each orifice will be treated on its own account, and the deep region of the trajectory should be respected.

13. No drain nor mesh should be placed in the cerebral substance. The craniocerebral wound can be treated by primary suture or by secondary suture after sterilization. Researches are necessary to know which of these two methods best obviates immediate or deferred septic complications.

14. The patient, as soon as he recovers from operative shock, will be placed in a half-sitting position.

15. Early cerebral hernias without deep infection should be treated by enlarging the osseous breach.

16. Thin cicatrices with large loss of bone substance and those which give rise to cerebral disturbances will be treated by plastics.

17. The secondary complications will be treated according to their origin, i.e., abscess of the brain, foreign bodies, adhering scars, by operations appropriate to each of these complications, and after consultation between surgeon and neurologist.

WOUNDS OF THE NERVES

After discussing reports by Conrad, Gosset, and Moynihan on wounds of the nerves, the Conference adopted the following conclusions:

1. In the surgical units at the front it is necessary that the greatest care be exerted in seeking lesions of the peripheral nerves both by clinical examination and by direct examination in the wound at the first intervention.

2. Whenever a peripheral nerve-trunk is found sectioned, if the conditions of the wound permit, primary suture of the nerve should be done, and mention of this suture should be made on a special report to accompany the patient.

3. If the nerve has not been sutured during the primary treatment of the wound, or if the lesion has passed unperceived, the necessary operation should be done when making secondary reunion of the wound.

4. This operation, primary or secondary, of itself suffices for the functional restoration of the nerve. In any case it puts the nerve-trunk in the best condition for a later operation, if such is necessary.

5. Later on the various functional defects consecutive to nerve lesions may be the object of different operations undertaken after examination made by a neurologist.

6. During the whole treatment, special supervision should be given to a good position of the limbs, to the working of the joints, and to the nutrition of the muscles.

7. Operations on nerves, no matter of what kind, call for perfect asepsis, much minuteness, and a delicacy of touch in handling the nerve itself.

8. Suture should be done in the nerve extremities resected, as far back as the healthy tissue; the lower end should be normal in aspect and deprived of any fibrous tissue which is an obstacle to regeneration.

9. Contact between the two nerve extremities appears to be necessary for regeneration; it seems, however, that suture at a distance and suture by "dedoublement" of the lower end can be employed when nothing else can be done.

10. Grafts up to the present time have not given any special results.

11. Instead of nerve suture, recourse may be had to tendon transplantation: (1) when nerve suture is impossible; (2) when the functional result in spite of the operation on the nerve-trunk is insufficient. W. A. BRENNAN.

Morgan, O. G., Sauer, F. D., and Schlesinger, E. G.: Some Aspects of the Treatment of Infected War Wounds. *Brit. J. Surg.*, 1918, v, 425.

The authors very properly call attention to the fallacies that are apt to creep into the conclusions of those who treat war wounds in active campaign, since the observations are apt to be confined to the time in the passage of the wounded from the front to a base. In the present war, English observers may divide their opportunities to observe war wounds and their infection into three stages: (1) at the front proper, (2) at the bases in France, and (3) at the bases in England. The authors in this instance desire to limit their views to those matters

which relate to the treatment of infected wounds at the base in France.

The divergent views which are expressed in the literature from time to time as to the efficacy of similar methods of treatment no doubt sometimes come from an "attempt to argue from facts, observed in one place, to a purely imaginary set of conditions in another."

The trials of a wounded man in war are not appreciated save by those who have witnessed his agonies from the front to the base. In the first week he suffers from the initial shock and loss of blood; from transport, very often rough; from the lines through a field ambulance to the casualty clearing station and then to the base. All this time he is apt to suffer from surgical interference and the distress of infection. The first few days after arrival at the base are occupied by sleep.

Fractures arrive in splints adopted to the emergency conditions in war and these have to give way to suitable immobilization of a kind best adapted to hospital treatment. This may or may not necessitate the use of an anæsthetic, notwithstanding the fact that one had been employed a very short time before, at a casualty clearing station.

The first attempt at treatment at a base hospital is directed toward the nonspread of existing infection. The measures include: (1) rest or immobilization, by splinting; (2) rapid removal of all dead tissue by the use of the hypochlorite solution of Dakin and Daufresne according to the Carrel technique. Carrel tubes are placed in position during the anæsthetic, if one is used, and intermittent irrigation is at once commenced. As nature's defenses are not yet established, it is advisable to do as little surgery in this stage as may be consistent with proper management. If necessary, after immobilization, pain may be controlled by drugs.

Remember that the resistance of the wounded is usually impaired by a period of great stress and that they are a prey to the more virulent infections.

As to the lines of treatment, the authors discourse very interestingly. The present war has brought out the claims of two schools in a great controversy, namely, (1) the reactionaries or antiseptic school; (2) the progressives or physiological school.

The school of antiseptic methods holds that since sepsis is caused by micro-organisms, when these are once destroyed the aims of this treatment have been attained, and when the wound fails to become clean under the mode of treatment employed, there is some detail or principle at fault in the use of the particular substance employed.

The physiological school claims nature as their laboratory. When dealing with an infected wound, the method of the latter is to limit as rapidly as possible the depredations of the invading organisms by destroying the food on which they live, and at the same time to guard against farther invasion by setting up a strong zone of defence around the wound. The first of these two, the destruction of the pabulum on which the microbes feed, is accomplished by liberating trypsin from dead pus. Trypsin so liberated splits up the protein of dead tissue, thereby forcing the micro-organisms to attempt their destructive activities against living or fighting cells.

Further invasion of the injured tissue is hindered by throwing out a band of leucocytes where the injured and sound tissues meet.

Of these two methods, the one most likely to find favor is the one which more nearly imitates nature's way.

Rapid removal of all dead tissue is the best method of dealing with infection in war wounds, but it must be practiced in the very early stages of treatment. If one waits until infection is actually in progress, the method will fail.

The neutral hypochlorite solution of Dakin and Daufresne is of great proteolytic value, chiefly due to the fact that it is itself destroyed as soon as it comes in contact with the tissues, which, on the other hand, prevents its irritating effects from interfering with tissue cells Its action on coagulated protein is very much more powerful than trypsin. The fact of its rapid decomposition in the presence of dead tissue renders the necessity of rapid accession of fresh solution very necessary. This object is achieved by the intermittent irrigation method of Carrel.

Nature's method of dealing with an infected wound, the establishment of a zone of leucocytes, is best aided by absolute rest and a minimum of interference by the surgeon.

Treatment of the wounded part is by absolute rest. This is best done by careful splint and subsequent suspension of the limb from overhead pulleys with accurately balanced counterweights so that any movement of the patient in bed is followed by the splint without disturbance of the injured limb or pain therefrom. Pain in a wound is always or nearly always the result of faulty immobilization, unless one excepts pus under tension.

Sinclair's glue is preferred to secure extension. In dealing with fractures and wounds of the lower limb, Thomas' splint is almost entirely used, either straight or bent and suspended in extension on the Hodgen principle, the end of the bed being elevated.

The method of immobilization for fractures generally employed is minutely detailed in this important article, and those who are engaged in war surgery will find many valuable hints.

In the treatment of the wound itself the following rules are laid down:

1. Destroy as rapidly as possible all dead tissue in a wound by intermittent irrigation through Carrel's tubes with the hypochlorite solution of Dakin and Daufresne. This can only be done by a careful and proper adjustment of the tubes.

2. Tubes for deep wounds are provided with few holes only, because pressure of flow is here required; while surface wounds do best with tubes liberally perforated because low pressure is here called for.

3. Two sets of tubes are kept ready; deep and surface tubes connected to different supply reservoirs.

4. Do not use too many tubes, lest the attempt at drainage is defeated by tubes acting as stoppers, to prevent drainage. Tubes properly placed are not disturbed, except as they become misplaced or blocked, for seven or eight days. In the case of compound fractures, verify the correct position of the tubes by a radiogram. Continuous irrigation is not recommended because, as already stated, the hypochlorite is destroyed in a few seconds after contact with protein in solution, and it is necessary to allow the tryptic and phagocytic processes undisturbed opportunity to cleanse the wound, and this is best done in the intervals between flushings in the intermittent irrigation.

5. In the early states of wound treatment when dead tissue is more plentiful, irrigate as often as once per hour; later once in two hours.

6. The hypochlorite becomes irritating as soon as the wound becomes free from pus and then it becomes necessary to carefully vaseline the surrounding skin.

7. To minimize the disturbance of dressings, use large pads made of layers of wool between gauze in lieu of wool and bandages. After the pads have soaked up the discharge, the over-flow runs into a metal tray, placed under the part, and the fluids are then conducted into bottles beside the bed. The pads are changed every day at first, and then less often, until they may be later allowed to remain in place as long as one week. Proper adjustment of the tubes should be carefully watched. In guillotine amputations dressings may be left untouched for a week or ten days.

The ordinary surgical principles observed in the management of infected wounds should not be lost sight of, i.e., complete drainage by the opening of the wounds of entrance and exit, as free opening up as is necessary, and the employment of well placed counterincisions, as in the case of compound fractures. The remote parts of wounds located in pockets should be made accessible to the solution since dead tissue in some recess unassailed by the hypochlorite will persistently reinfect the wound.

In acute sepsis it is not sound surgery to practice too much manipulation in search of hidden pus. With complete immobilization a barrier is spread against any general spread of infection. Localized pus can be more advantageously let out later when its presence is determined by a fluctuating abscess and again it may spontaneously evacuate into the general cavity of the wound. A spreading cellulitis or acute abscess must be dealt with preferably in bed, under gas, which insures a minimum of movement to the affected part.

Cases are kept at this base hospital until serious complications are unlikely.

In the case of fractures, perfect position of the fragments must be maintained, at least as perfect as possible.

The removal of loose fragments of bone should not be practiced too radically. If all loose fragments are removed, "a more rapid sterilization and quicker closure is obtained." In other words, the surgeon by this practice converts a compound fracture to something akin to a simple fracture, and incurs a minimum of sepsis. The authors are inclined, however, to a middle ground in the removal of loose pieces of bone. They remove all completely detached fragments. They leave any piece bearing attachment to the tissues. These pieces are apt to become firmly attached later and they play an important part in the deposit of callus along the line of the bone. There can be no doubt that by this attitude the probabilities of obtaining a better bone anatomically are greater.

As to the question of complete closure of a wound, in compound fractures when the bacteriological count warrants such a procedure, the authors believe that this can only be successfully practiced in simple cases. The moment for evacuation has usually arrived when closure of these war wounds is considered, and the procedure is made risky.

Considerable advance has been made in the present war in the treatment of infected joint wounds, and many limbs are now saved which were lost formerly.

The plan of washing out and closing joint wounds at the front, and more particularly knee-joint wounds, has on the whole yielded good results. Primary closing is practiced at the casualty clearing station. While suppurative arthritis may supervene up to two weeks or more after closure, such a contingency is the exception rather than the rule. In the successful cases an almost perfect joint is the result, while in those with failure the attempt at perfection has not set the case back materially. Extension seems to be the first essential of treatment and the earlier it is applied, the more hopeful is the outcome. Cases where the injury is located anterior to the crucial ligaments offer better hope of recovery to both life and limb. The amount of pull in efforts at extension must be sufficient to ensure an actual stretching of the ligaments and separation of the joint surfaces. This it is claimed is best accomplished by the use of the extension stirrup devised by Finochietto which is shown among the illustrations.

If arthrotomy is decided upon, provision must be made to give free access to all parts of the joint by the irrigating fluid. In inflammation in the anterior part of the joint, incisions on either side of the ligamentum patellæ and a small incision at the topmost part of the suprapatellar pouch will suffice. In cases running a favorable course the irrigation tubes can be withdrawn to the level of the capsule after a few days and movements as far as the extension apparatus will allow may be practiced. In cases of posterior crucial spread of the inflammation, early incisions are not advocated lest new paths of infection are opened up. It is better to rely on the extension to confine the inflammation to the anterior part of the joint, and to allow pus to point behind, before interfering.

The elbow-joint presents injuries which very much resemble fracture of the long bones rather than injury to epiphyseal ends, and therefore the early treatment by washing out and suturing is seldom possible. Incision, as in fracture, to all parts of the injured area is the essential point in the treatment. When arthrotomy is required for a suppurative arthritis complicating a fracture around the joint, the authors have used a longitudinal incision over the head of the radius in preference to the more usual posterior incision and they then treat the joint in flexion rather than extension. They follow this plan also in cases of elbow injury which may require separate incisions to expose all parts of the joint. They claim that the incision over the head of the radius "brings the orbicular ligament under the eye of the surgeon, and allows early interference in case of infection before the all-important radio-ulnar joint becomes disorganized."

Excision of the elbow is not favored because of the great readiness with which infection in these cases has come under control with simple drainage and hypochlorite irrigation.

On the subject of amputation, the authors tend toward extreme conservatism in spite of the fact that many limbs shattered by the missiles of war may be saved and remain useless. While they admit also that the attitude of extreme conservatism may have ended in death at times, still it often happens that quite sound limbs have been saved which at one stage appeared impossible to save.

Wounds of muscles require careful attention, as they are apt to end in massive scar-formation. Rest is just as essential in wounds of muscles as in compound fractures, and this is specially so where tendon sheaths are open to the spread of infection. By the use of hypochlorite solution, sloughing and suppurating muscle wounds are freed of all dead tissue in a few days except where dead tendon tissue is present. This should always be removed by cutting away with scissors. When such wounds are closed early after sterilization, avoidance of much disability and many painful and contracted scars is practically certain. When suppuration and a high bacterial count persist beyond the usual time in deep and through-and-through wounds of the thigh for instance, if no foreign body is present, it will often happen that a portion of dead tendon will be found on exploration.

Multiple wounds have shown but little reaction in some cases. They are not severe and the patient exhibits little or no resistance to infection. Pus is not present, and there is no evidence of local inflammation. These patients grow steadily worse and die in shock or with symptoms of shock. These cases present a difficult pathological problem to the authors, since it is not clear to them why the shock should be so severe in a patient whose "total wound area may be considerably less than that of a vigorously reacting single-wound case."

Septicæmia and secondary hæmorrhage are the two severe and at times dangerous complications.

Septicæmia is prone to occur with insufficient drainage and faulty immobilization, especially when subject to stress of transport. For these reasons the complete early closing of wounds when transport impends, and when no absolute certainty can be felt that infection is completely mastered, should be employed.

Secondary hæmorrhage is nearly always associated with extremely septic wounds. The latter is usually the result of insufficient drainage; and for the prevention of both sepsis and hæmorrhage, free drainage would seem to be the first important measure to adopt to avoid ugly complications.

The authors express the view that the hypochlorite solution is unimportant as a bactericidal agent, and that its undoubted value in the treatment of infected wounds depends on its power of destroying dead tissue on which the bacteria subsist. As the dead tissue disappears, the organisms diminish in number. The nature of the flora of wounds treated by hypochlorite shows that the coliform and sporing bacilli disappear first, then bacillus welchi, and that the streptococci are the most persistent.

Concerning experiments with the hypochlorite solution on muscle, catgut, silk and cotton, which were all readily destroyed *in vitro*, the authors remark that destruction of suture materials which might be disastrous fails to take place in a wound in which hypochlorite is used because the amount of protein in solution present is sufficient to neutralize the hypochlorite as it is introduced.

The plan of bacteriologic control follows the method of Carrel in noting the character of organisms, the nature of cells, the relative number of mononuclear cells and their preservation, phagocytic activity, etc. The chart showed a steady downward tendency in the number of organisms so long as dead tissue continued to be evenly eliminated. On the other hand, a persistently high bacterial count almost always indicated the presence of a foreign body.

As regards the cell contents of the films, at first only polymorphonuclear leucocytes are seen. As sterilization proceeds, large lymphocytes and endothelial cells appear, as many as 6 to 7 of the polycells. A large number of mononuclears is sometimes seen when there are still many organisms in the wound, but in general the appearance of mononuclear cells is a favorable indication.

The authors pay tribute to Carrel and his coworkers at Compiègne for their valuable technique in the treatment of war wounds.

The article is accompanied by an appendix which gives results in 154 gunshot wounds, showing the number of days the wound had existed on admission, the missile causing the injury, the temperature in each case, the presence of sepsis and the number of bacteria per microscopic field, the number of days required to cause disappearance of dead tissue, to obtain sterility, the time of treatment and the condition of the case at time of transfer, all of which affords interesting data. L. A. LaGarde.

GYNECOLOGY

UTERUS

Esquerido: Results of Radium Application in Uterine Cancer (Resultados de la aplication del radium en el cancer del utero). *Therapia*, Barcelona, 1917, ix, 681.

The author has used radium in 12 cases of uterine cancer since February, 1916. In 3 cases of operable cancer, all recovered. In 7 inoperable cases there were 3 recoveries, 1 improvement, and 3 still in course of treatment. In 2 cases of inoperable epithelioma of the cervix and uterine corpus, the tendency is to grow worse.

In 2 cases of recurrence after operation, the application of radium obtained a reduction of cicatricial fungi in one. W. A. BRENNAN.

D'Onofrio, M.: Clinical and Anatomo-Pathological Note on a Rare Uterine Tumor (Note cliniche ed anatomo patologies di un raro tumore uterino). *Gazz. d. osp. e d. clin.*, Milano, 1917, xxxviii, 1262.

The patient was a primipara of twenty-three years, in a state of dystocia. On examination a hard oval mass about the size of a lemon was felt in the cavity of the lower pelvis. On incising the overlying tissues the mass, which was hard, was detached and extracted. The fœtus was alive and was immediately extracted by forceps. The mother recovered.

The mass extracted weighed with the attached soft parts 900 grams and dry weighed 550 grams. It was oval in form, greyish-yellow in color, and rough. Microscopic examination after decalcification showed that it was essentially composed of connective tissue. There were no traces of cellular elements. The tumor was a hard fibroma which had become calcified. It originated from the neck of the uterus as a so-called interstitial tumor, which develops in the thick wall of the uterus, as distinct from the subserous or submucous tumors which develop toward the uterine cavity. The site of the tumor explains its fibrous structure.

W. A. BRENNAN.

Warner, F.: Uterine Fibroids with Reference to Their Tendency to Become Sarcomatous; a Study of 100 Consecutive Cases. *Am. J. Obst.*, N. Y., 1917, lxxvi, 888.

Warner bases his pathological study of sarcomatous changes in uterine fibroids on the ground that the so-called fibroid is, as a rule, a leiomyoma, for the tumor develops from the smooth muscle-cells of the organ in which the growth is situated. As a result of the production of quantities of newly developing smooth muscle-cells, the formation of new connective tissue is stimulated. This later, by contraction, obliterates more or less the original constituent parts of the smooth muscle-celled tumor. On the other hand, rapid growth of the tumor produces a myoma relatively free from connective tissue. It is this latter type of growth which the author regards as peculiarly apt to become sarcomatous.

The examination of 100 consecutive specimens of uterine leiomyomata gave the following results:

Seven per cent were of the very cellular type; 18 per cent moderately cellular; 75 per cent of a scirrhous character; 24 per cent showed hyaline degeneration, in some cases extensive, in 3 per cent of the arteries only; 22 per cent were œdematous; in 19 per cent the arteries showed sclerosis, though sections from many specimens were not cut so as to show the arteries, wherefore Warner believes that the percentage of arterial degeneration would far exceed this figure. Two per cent were complicated with sarcoma, while 5 per cent were of the very cellular type and apparently well on the border-line of malignancy. One per cent showed carcinoma, though in many the cervix was not examined owing to supravaginal hysterectomy. Twelve per cent of the specimens showed rather rich lymphocytic infiltration.

The author believes that, with two of these tumors definitely sarcomatous and five more well on the road to sarcoma, "histologically malignant but clinically non-malignant," seven per cent in all, the importance of the early removal of these tumors is strongly suggested. CAREY CULBERTSON.

Stage, S. J.: Uterine Myomata. *J. M. Soc. N. J.*, 1918, xv, 1.

In reviewing the pathology of uterine fibromata, Stage emphasizes the resemblance of the tumors to pregnancy; especially is this true of the submucous variety, which distends the whole body of the uterus symmetrically, as the growth of the tumor is toward the cavity of the uterus under its mucous coat with a broad or sessile base. The submucous or subperitoneal tumor grows toward the peritoneal cavity under the peritoneum and usually produces an irregular or nodular outline of the uterus, or may become pedunculated.

The interstitial variety begins in the muscle wall and has a tendency to extend outward or inward, passing into one of the other varieties.

When the removal of a myomatous uterus becomes necessary, a complete hysterectomy is best; however, if co-existing conditions, such as cardiac insufficiency, nephritis, or any other contra-indications to a prolonged operation are present, and the cervix healthy, the latter may be left.

The author reports a case of a multipara forty-four years of age, who came to be treated for cardiac and renal trouble with no pelvic symptoms for about two years. She permitted no vaginal examination until a uterine hæmorrhage made it imperative. A large symmetrical uterine growth was discovered, causing a severe internal hæmorrhage as well as pain by pressure on the sacral nerves.

On account of the weakened condition of the patient, a supravaginal amputation was done with an uninterrupted convalescence and general improvement. L. R. GOLDSMITH.

Graefe, M.: War Amenorrhœa in Germany Due to Denutrition. *Muenchen. med. Wchnschr.*, 1917, lxiv, No. 18.

Graefe of Halle reports an increase in amenorrhœa since the beginning of the war, in young girls who have reached puberty. Amenorrhœa is not infrequent in cases where the conditions of life are changed at the time of puberty. In the present instance the change is one of diet. This differs from the pre-war diet in poverty of flesh and fat. There is also a prolonged physical and intellectual weakening.

Since the beginning of the war Graefe has noticed that amenorrhœa has increased from 1.5 to 5 per cent of all the cases treated in his gynecological clinic. Other authors report the same.

A circumstance found to accompany the genital symptoms was diminution in volume of the uterus.

The author is of opinion that the cause lying at the bottom of the type of amenorrhœa observed is defective ovarian secretion. He points out the possibility of such amenorrhœa reaching a degree which ends in sterility. This is a serious matter at the present time, when it is desired to increase the number of births.

This condition of war amenorrhœa was not noted in previous wars; but this fact is not surprising, since in no previous known war were all the conditions of life so profoundly modified as in the present one, especially the modification in diet, qualitative as well as quantitative.

W. A. BRENNAN.

Rongy, A. J.: Prolapsus Uteri and Its Treatment. *J. Am. M. Ass.*, 1917, lxix, 1863.

The author believes that the factors concerned with the production of prolapsus uteri are: (1) the construction of the bony outlet; (2) the general muscular development of the patient, especially as regards the muscles of the pelvic outlet; (3) the size of the child, particularly in cases which are overdue.

The first two factors are concerned with prophylaxis in the adolescent in the form of exercise, improved personal hygiene, and early recognition and management of hypophyseal and epiphyseal dysfunctions. The third factor is absolutely under control in the large majority of cases. No primipara should be allowed to go overtime on account of the increased size and rigidity of the fœtal head.

The ideal method for the correction of pelvic hernia in the form of uterine prolapse is, according to Rongy, the interposition operation. The most important single step in this procedure is to select the proper point for fixation of the anterior wall of the uterus to the roof of the vagina. If fixed too high, pressure symptoms on the neck of the bladder, and if too low a sense of bearing down in the vagina, results.

Women of the child-bearing period upon whom this operation is done should be sterilized lest abortion or dystocia result.

Discussions of this paper by Newton, Aranow, and Jack are also given. K. L. VEHE.

Bessesen, A. N.: A Simple Operation for Retroversion of the Uterus. *Am. J. Surg.*, 1917, xxxii, 9.

A simplified method of correcting retroversion of the uterus has been tried by the author in a number of cases with entire satisfaction.

His modification of Dudley's method which appeared in the *American Journal of the Medical Sciences* for June, 1906, is given in detail.

The operation is done intra-abdominally, using non-absorbent suture material or chromic catgut. An ordinary needle is passed through the left round ligament about half an inch distal to the uterus. From that point a purse-string suture is run through the round ligament to the internal ring, where the needle takes a bite through the tissues of the ring, and a return purse-string is run back through the round ligament to the point of starting. The round ligament on the right side is treated in the same manner. When the operator draws taut the suture of one side and his assistant draws taut the suture of the opposite side, it is easily determined how much tension will be required to bring the uterus into the corrected, or rather, over-corrected position. The sutures are then tied. If desired, a shortening of the uterosacral ligaments can be performed to give added security.

The operation aims at retaining the strongest part of the round ligament to functionate. The thinner outer part is crumpled on itself in such manner that it is made thicker and of equal strength with the uterine end of the round ligament. The uterus is thus held in a normal position and supported by its round ligament in a natural way. There are no loops or holes for the intestines to enter and cause trouble. Should pregnancy occur, the uterus is free to move and rise as may be required.

Kahle, R. R.: Uterine Rupture Following Anterior Hysterotomy. *J. Am. M. Ass.*, 1917, lxix, 2170.

The patient, aged 23, had been well until a miscarriage at three months occurred in December, 1915. At that time, in order that hæmorrhage following fœtal expulsion might be arrested, the abdomen

was opened, the uterus incised, and the offending placenta removed. Operative recovery was prompt.

Eighteen months later the patient came to labor at full term. Mild labor pains appeared irregularly for about forty-eight hours. The pulse was rapid, but of good volume. Gastric dilatation was in evidence. There were no fœtal heart sounds. Profound shock was absent and the patient said that she felt quite well. The uterus and fœtus could not be separately palpated through the abdominal wall.

A dead fœtus was removed from the peritoneal cavity, hysterectomy was rapidly performed, and a quart of physiologic sodium chloride solution administered intravenously. An uninterrupted recovery followed.

Examination of the uterus revealed that it had yielded at the old hysterotomy scar.

EDWARD L. CORNELL.

ADNEXAL AND PERIUTERINE CONDITIONS

Gellhorn, G.: Unilateral Defect of Tube and Ovary; a Study in Prenatal Pathology. *Am. J. Obst.*, N. Y., 1917, lxxvi, 878.

The author reports the interesting case of a nineteen-year-old nullipara in whom, during a laparotomy, the total absence of the left tube and ovary and of the left broad ligament was accidentally discovered. The uterus possessed perfectly normal configuration. The right adnexa were inserted at the uterine horn. The sexual characteristics were otherwise normally developed. Chromocystoscopy revealed the absence of an ureteral opening on the left side which suggested absence of the left kidney.

This case leads Gellhorn to discuss the variations in congenital and acquired defects and their differences. In a congenital or primary aplasia of one tube and ovary, the uterus has the characteristic form of the uterus unicornis, an elongated and spindle-shaped organ which leans toward the side where the adnexa are present. On the other hand, if the uterus is of normal shape, as in the case reported, aplasia of one tube and ovary must be considered a primary defect; that is, acquired in antenatal life. The etiologic factors are either torsion of the adnexa or fœtal inflammation. The few cases thus far recorded in the literature are reviewed; in none of them is the defect as complete as in Gellhorn's case.

CAREY CULBERTSON.

MISCELLANEOUS

Griffith, F. W.: Some of the Common Errors in Gynecology. *South. M. J.*, 1918, xi, 40.

The author deals with those conditions which are frequently met by the general practitioner. He strongly urges physicians to avoid vaginal examinations on virginal women and to become more familiar with the rectal examination.

In his opinion the tampon is used entirely too frequently and it is apparently so used for the control of hæmorrhage incident to pregnancy or the puerperium, as a means of applying medicines in inflammatory conditions, and as a test of the probable benefit of an operation for displaced uterus. Chronic endometritis is relatively rare, while chronic endocervicitis is quite common.

He recommends local measures, such as the actual cautery, for the eradication of infection in the cervix, but condemns its application to the body of the uterus. While the diagnosis of ulceration of the cervix is frequently made, it is usually an incorrect one. There is frequently an eversion of the cervix so that the observer really sees the normal mucous membrane of the canal. This gives an angry appearance to which he applies a caustic. There is then a proliferation of cells and the ulcer is said to be cured. Soon these cells desquamate, the ulcer is said to have recurred, and the patient is put through the same treatment again. Such eversions if left alone will seldom cause trouble and the patient will be saved unnecessary worry and expense.

The author emphasizes the fact that in a patient past thirty-five, unusual bleeding or discharge is not due to the menopause, but is presumptive evidence of cancer, until proven otherwise. He states that retroflexion of the uterus *per se* is not an indication for operation, and even recommends that when in a routine examination a symptomless displacement is found, the patient should be kept in blissful ignorance of it. He urges that the practitioner should get away from the idea that most nervousness, headaches and obscure pains are due to the pelvic organs.

OBSTETRICS

PREGNANCY AND ITS COMPLICATIONS

Thoenen, F.: A New Specific Serum Reaction for the Diagnosis of Pregnancy. *Muenchen. med. Wchnschr.*, 1917, No. 24.

Thoenen of the Obstetrical Clinic of Berne gives a new reaction in pregnancy. For this a preparation is used which consists of a combination of placenta with iron. It is manufactured in Berne and gives a specific reaction with the blood serum during pregnancy. A centigram of the preparation is placed in a sterile test tube. To this is added a centimeter of serum. After three hours the mixture is filtered and washed in distilled water. To the filtrate is added twenty drops of 18 per cent hydrochloric acid and an equal amount of an aqueous solution of 50 per cent ferrocyanide of potassium and shaken up with 2 ccm. of ether. A positive reaction gives a decided reddish color; the reaction of control remains uncolored or shows only a tendency toward red.

A first series of trials gave 94 per cent of correct results. In another series the author obtained 98 per cent of correct results. In all controls negative results were obtained. Even in pathologic conditions when the Abderhalden method sometimes gave positive reactions, the author by his method claims to have obtained negative results. Thus in the controls with negative results there were 17 cases of adnexal disease, and 9 cases of tumor, 7 of them carcinoma. W. A. BRENNAN.

Heineck, A. P.: Double, Recurrent and Bilateral Tubal Pregnancies; an Analysis of 89 Cases Reported in the Literature and 3 Unpublished Personal Cases. *Illinois M. J.*, 1918, xxxii, 1.

The author has collected, studied and analyzed all cases of double and bilateral tubal pregnancies reported with sufficient data in the English, French, and German literature from 1908 to 1916 inclusive.

Double tubal pregnancies are almost invariably bilateral, exceptionally unilateral. Double and bilateral tubal pregnancies are either simultaneous or recurrent. They can occur at any period of the child-bearing age.

One ectopic pregnancy is not necessarily followed by another ectopic pregnancy. Normal pregnancies may be sandwiched in between two extrauterine gestations. Months, or even years, may elapse between the incidence of pregnancy in one tube and the lodgment of an impregnated ovum in the opposite tube. In the collected cases the interval between the two tubal gestations varied from three months to nine years.

Double, recurrent and bilateral tubal pregnancies occurred in women who had never borne living children.

The cause of tubal pregnancy, whether single, double or recurrent, is not definitely known. Inflammatory and other degenerate changes of the tubal wall do not possess the important etiological rôle formerly attributed to them. It has been believed that the predominant cause of tubal pregnancy is salpingitis, postabortum, postpartum or gonorrhœal in nature, with resulting destruction of the tubal ciliated epithelium.

All the collected and personal cases were primarily either interstitial, isthmic or ampullary. All the others were bilateral. These 92 cases represent 185 tubal gestations. Not one of these pregnancies, either first or second, went to full term. Sixteen gestations were subjected to operative relief previous to tubal abortion or tubal rupture.

Rupture, extratubal, occurs at or near the placental site, taking place either into the peritoneal cavity or between the folds of the broad ligament. Bilateral tubal gestation may terminate in tubal rupture in one tube and in tubal abortion in the other.

Tubal abortion and tubal rupture, be the latter intra- or extratubal, are associated with moderate or profuse internal hæmorrhage, either in the lumen of the fallopian tube between the folds of the broad ligament or into the peritoneal cavity.

When hæmorrhage takes place into the free peritoneal cavity, a practically limitless space, the patient may bleed to death without a drop of blood appearing externally.

The treatment of ectopic gestation previous to, at time of, or after tubal rupture or abortion is operative.

It is not justifiable to sterilize a woman just because she has had a tubal gestation. Remove the unaffected tube:

1. If there be existing in the patient some constitutional state contra-indicating pregnancy, such as epilepsy, alcoholism, the worst types of neurasthenia, syphilis, mental disease, imbecility, advanced tuberculosis, advanced cardiac, renal or hepatic disease, bad types of primary anæmia.

2. If there be existing in the patient some pelvic deformity preventing delivery of a viable fœtus through the maternal passages.

3. If it be imbedded in adhesions, if it be malformed or the seat of a congenital anomaly or of inflammatory, neoplastic or other degenerative changes; hydrosalpinx, pyosalpinx, etc.

The mortality of bilateral tubal pregnancy, skillfully operated upon, is very low. It should be

nil. In the collected cases there were only three deaths; two from peritonitis and ileus and one from peritoneal hæmorrhage. EDWARD L. CORNELL.

Maldonado, J. A.: Abdominal Cæsarean Section and Subtotal Hysterectomy for Contracted Pelvis with Eclampsia (Cesarea abdominal e histerectomia subtotal por estrechez pelviana y eclampsia). *Crón. méd.*, Lima, 1917, xxxiv, 419.

Maldonado's case was that of a primipara of twenty-two with an infantile pelvis in whom labor was impossible by the natural route. While she was under observation in the clinic three attacks of eclampsia occurred. Laparotomy and abdominal cæsarean section was done, followed by subtotal hysterectomy and vaginal drainage. The fœtus was somewhat asphyxiated but was revived. It was normal in dimension and weight. The same day upon which she was operated, the patient had three more attacks of eclampsia.

Mother and child left the hospital in perfect condition. M. A. BERNSTEIN.

Huntington, J. L.: Certain Causes of Bleeding During Pregnancy; Their Significance and Treatment. *Interst. M. J.*, 1917, xxiv, 1161.

Huntington calls attention to the fact that bleeding at any time during the course of pregnancy is a symptom which may be of gravest import. It is a condition that demands intelligent and rapid action on the part of the obstetrician in charge, and should he be not able to cope with the situation at hand, consultation should be demanded without delay. The conditions causing hæmorrhage during pregnancy discussed by the author are:

1. Extra-uterine pregnancy.
2. Threatened abortion.
3. Placenta prævia.
4. Premature separation of a normally implanted placenta.

The treatment of ectopic gestation, once the diagnosis is made, is operation.

In the threatened abortion cases the author recommends curettage as a routine, unless one can be sure that the ovum and secundines have been expelled. In the fifth and sixth months curettage is not so necessary, for then one can with more certainty ascertain just what has been expelled.

In placenta prævia, accouchement forcé, bipolar version, Voorhees' bags, vaginal and abdominal cæsarean section are the methods recommended. Accouchement forcé can only be used in those cases where considerable dilatation has already been obtained. The danger of disabling lacerations of the cervix and lower uterine segment are great. Bipolar version is perhaps the best procedure for the general practitioner. It has high fœtal mortality, but is safest for the mother. The insertion of a Voorhees bag is simpler than bipolar version and offers a better chance for the baby. Vaginal cæsarean section has a narrow field in placenta prævia and should rarely, if ever, be done. Abdominal cæsarean section is indicated in all primiparæ and in certain multiparæ who are not in labor, provided no infection be present.

In ablatio placentæ in multiparæ with soft cervix, delivery by the vaginal route by any method indicated is the proper procedure. If severe toxic symptoms are present, abdominal cæsarean may be indicated. In primiparæ, unless dilatation can be effected rapidly and easily, abdominal cæsarean is the method of choice.

Hysterectomy may also be indicated in any case where, due to an atonic condition of the uterus, hæmorrhage persists. H. B. MATTHEWS.

Hirst, B. C.: The Diagnosis, Treatment and Management of Surgical Conditions Complicating the Process of Generation. *Am. J. Obst.*, N. Y., 1917, lxxvi, 971.

Hirst relates some interesting conditions in pregnant women encountered during his hospital work in Philadelphia. He refers to the unfavorable results in plastic work, particularly that done in special operations on women.

The case in point was one of conglutination of the external os resulting from an operation for lacerated cervix. Hirst says that it is perfectly easy to deal with these cases of conglutination of the external os by an incision in the overdistended lower uterine segment, the center of the crucial incision corresponding to the site of the external os.

W. A. BRENNAN.

Bainbridge, W. S.: The Influence of Pregnancy on the Development, Progress, and Recurrence of Cancer. *Am. J. Obst.*, N. Y., 1918, lxxvii, 21.

Bainbridge reports two cases, one a recurrent carcinoma following cancer of the breast, the other a sarcoma of the lower eyelid and superior maxilla, both occurring as complications of pregnancy. The clinical and experimental literature is then reviewed briefly and the following conclusions are set forth:

1. Pregnancy increases the rapidity of growth of co-existent spontaneous cancer.
2. If, as some contend, there is a retardation of the malignant process during gestation, the significance of this should not be misunderstood. Rapid increase of growth may follow delivery.
3. While the stimulating effect of pregnancy is exerted more markedly upon the organs more directly concerned with the pregnant state, cancer in any other part of the body may be influenced in like manner.
4. If the cancer is removable, in order to secure the best chance of permanent cure, the pregnancy should be terminated, regardless of any consideration for the child.
5. Even in advanced cases of malignant disease, in which there is no hope of cure for the mother, it is a question whether she should not be given a chance of prolongation of life and, more important, a mollification of suffering which abortion may give.

CAREY CULBERTSON.

LABOR AND ITS COMPLICATIONS

Morinelli, V.: Infarcts of the Placenta; Contribution to their Study (Infartos de placenta; contribucion a su estudio). *Semana méd.*, Buenos Aires, 1917, xxiv, 360.

The author reaches the following conclusions:

1. Subchorionic infarcts are very frequent. They have been observed in 60 per cent of placentas taken at random.

2. The author thinks that they are produced by an alteration in the basal chorion; hence they depend on the age of the placenta. This explains their frequency and their harmlessness for fœto-placental development.

3. White nodular infarcts are observed in 15 per cent of placentas. They correspond to alterations of the synctium following slight endometritis. Unless the number of infarcts is very large they produce no appreciable alteration in the fœto-placental relations.

4. That infarcts have no influence in the production of abortion is evident since they are most frequent in the later months when abortion is less frequent.

5. White infarcts influence the detachment of the placenta by favoring hæmorrhage after birth.

6. The more important affections, syphilis, tuberculosis, etc., have no direct influence in the production of white infarcts.

7. Clinically white subchorionic infarcts have no importance, but nodular infarcts show the existence of a decidual endometritis. W. A. BRENNAN.

Roberts, C. H., and Stevens, T. G.: Twilight Sleep in Childbirth. *Med. Press & Circ.*, 1917, civ, 471.

Roberts and Stevens report on 67 cases of twilight sleep at Queen Charlotte's Hospital. In 90 per cent of the cases the pains were diminished; 46.2 per cent had complete amnesia; 44.7 per cent had partial amnesia. Analgesia was complete in 32 cases; partial in 31. There were 2 complete failures.

The puerperium in their 67 cases was uneventful. Involution was not retarded. There were 12 forceps cases, every one of which was due to an obstetric complication not dependent upon twilight sleep. The placenta was spontaneously expelled in 65 of the 67 cases. There were 2 postpartum hæmorrhages, but one was due to an adherent placenta and the other to a low implanted succenturiate placenta. Fifty-three babies breathed or cried spontaneously. Thirteen babies cried after moderate resuscitation. Three babies died. Two were premature and one died of bronchopneumonia on the sixth day. Of 64 living babies who left the hospital, 49 were breast fed. Whether twilight sleep affected lactation or not the authors could not say.

Considerable experience is required by the obstetrician, as well as the nurse, for the successful administration of morphine-scopolamine. Furthermore, every case of twilight sleep demands the constant attendance of a doctor. H. B. MATTHEWS.

Welz, W. E.: Eutocia Attained by Rational Methods Rather Than by Excessive Narcosis During Labor. *J. Mich. St. M. Soc.*, 1917, xvi, 501.

While fully in sympathy with the use of narcosis to relieve pain incident to uterine contractions, the author believes that recently attention has been focused upon this question to the neglect of equally important features of obstetrical care. Some of the neglected measures, because they tend to establish the patient's confidence, actually have the effect of making her less sensitive to pain.

The author argues convincingly that conscientious medical supervision during pregnancy not only places the physician in a position to treat his patient most intelligently at the time of labor, but imbues her with a degree of faith in the successful issue of her case. And this means greater fortitude for the hours while labor is actually in progress. A knowledge of the salient features of parturition has a similar influence. An intelligent view of the reproductive process, therefore, serves not only to secure the peace of mind of the prospective mother but also to promote the comfort of the parturient woman. Another argument in addition to those commonly advanced in support of conscientious prenatal care is briefly to the effect that an element of mental suggestion attends the medical supervision of pregnancy and this element tends to reduce the suffering of childbirth. J. M. SLEMONS.

Harrar, J. A.: The Causes of Death in Childbirth; Maternal Mortalities in 100,000 Confinements at the New York Lying-In Hospital. *Am. J. Obst.*, N. Y., 1918, lxxvii, 38.

Harrar's contribution is a brief one confined chiefly to statistics from the records of the New York Lying-In Hospital. Since the establishment of the service in 1890, 101,197 confinements, both outdoor and indoor, have been cared for, and it is with the mortalities of these that the paper deals. In the outdoor service are counted 69,081 confinements of which 218 women died. Of these, 137 died in their homes and 81 after transfer to wards of the Lying-In or other hospitals. The full maternal mortality of the tenement service, 218, represents one death in every 317 women confined or 0.31 per cent mortality. In the last eight years this mortality has fallen from one death in every 312 confinements to one in every 326 confinements.

Of the 23,130 regular indoor applicants confined, 109 died, one in every 212 confinements or 0.47 per cent. This higher mortality is attributed to the greater proportion of primiparæ in the indoor service, 48 out of every 100 patients as compared with 20 primiparæ out of every 100 labors in the tenement service. The death rate rises tremendously in the emergency cases confined in the hospital, 463 deaths, or 5 per cent.

Harrar regards these death rates as low but finds it disconcerting to discover that, even in these selected groups, the predominating cause of death is

puerperal infection. Of the 23,130 regular indoor patients, 23 died, or 0.95 per thousand; of the 69,081 outdoor patients, 59 died, or 0.85 per thousand. One-third of the deaths occurring among the postpartum admissions and emergency labors handled by a succession of midwives and doctors before admission were due to sepsis. Eclampsia ranks second as a cause of death, ten among the indoor patients, 0.43 per thousand; twenty-six in the outdoor service, 0.37 per thousand.

Peritonitis following cæsarean section occurred 13 times in the indoor service and 3 times in the outdoor service. Placenta prævia caused 5 deaths among the indoor patients and 25 among the outdoor patients, 0.20 per thousand and 0.36 per thousand, respectively. Five deaths were due to ruptured uterus, indoor service, and 20 deaths, outdoor service, or 0.26 and 0.28 per thousand, respectively.

Nephritis, broken cardiac compensation, pneumonia, shock, and exhaustion rank next in frequency. Then come shock and hæmorrhage after cæsarean section, tuberculosis, acute toxæmia of pregnancy, and accidental hæmorrhage. Abdominal pregnancy, rupture of the vaginal vault, pulmonary embolism and thrombosis, cerebral hæmorrhage, appendicitis, suicide in acute mania, carcinomatosis, brain tumor, sarcoma of the liver, ether and chloroform narcosis constitute the lesser causes. About one-tenth of one per cent of the total mortality consisted in sudden deaths of unknown causes, most of them apparently pulmonary embolism, but not verified by autopsy. CAREY CULBERTSON.

MISCELLANEOUS

De Normandie, R. L.: Obstetrics. *Boston M. & S. J.*, 1918, clxxviii, 76.

The author makes a strong plea for prenatal care from the earliest possible period of pregnancy in order to forestall the complications that may occur. By carefully examining and watching the pregnant woman and regulating her life as to diet, hygiene and medication, the mortality and morbidity among mothers and infants will be greatly reduced. Accidents of pregnancy and labor can not be entirely prevented, but may be greatly reduced.

A thorough physical and vaginal examination should be made as soon as the patient presents herself. In case of a badly damaged heart or kidney, an early abortion can be done. In retroversion of the uterus where the cervix is high up in the pelvis, just at, or behind the symphysis, and the fundus in complete retroversion, incarceration of the growing uterus will follow. This type should be corrected and a pessary inserted to hold the uterus until it cannot fall back. In milder cases the knee-chest position will facilitate the return to proper position of the retroverted organ. Coitus is in some cases a cause of miscarriage.

Up to the seventh month the patient is seen once a month and the urine examined likewise. After the seventh month the patient is seen once in two or three weeks, and the urine examined every week or ten days. With the urine normal and blood pressure staying under 130 mm. of mercury there is but little danger of toxæmia. The fulminating type may occur very suddenly, but is exceedingly rare. The great majority of eclamptic cases are preceded by premonitory symptoms and can be avoided. A rise in blood-pressure is of marked significance.

Bleeding, no matter how slight, during gestation demands immediate attention. Bleeding in the latter months is probably due to some type of placenta prævia, but it is questionable whether an immediate vaginal examination is indicated. Unless the physician is prepared to meet the hæmorrhage that may follow, it is best not to make examination. The author records a case in which the patient died within an hour after her physician started a severe hæmorrhage on examination, not being well prepared to cope with it.

The relative size of the fœtal head to the inlet is of importance. This can be determined by measurement, and particularly palpation. The inlet is more commonly contracted than the outlet. In the majority of cases there is no disproportion between the head and pelvis, but if it is markedly present, a cæsarean section can be done on an elected date. In the border-line cases a test of six or eight hours of good labor will often bring about a normal delivery. If a cæsarean is necessary, the risk of waiting a few hours with no vaginal manipulation is not great. While the author is not opposed to cæsarean section when necessary, he feels that the present tendency is too much toward this procedure in cases which could be treated otherwise.

Throughout labor watchfulness is essential. Vaginal examinations should be avoided, or only one under the strictest antiseptic precautions. Rectal examinations are of help, though they should not be used in the presence of hæmorrhoids. The condition of the uterus with regard to normal contractions and relaxations should be watched; also the fœtal heart sounds. Especially is the danger to the child great after the second stage. Postpartum hæmorrhage should be guarded against by careful attention to the separation of the placenta. If there is no bleeding, it is best to wait for normal separation. Adherent placenta is very rare, but when it occurs, manual emptying of the uterus is required. The physician should not leave the patient until the uterus is well contracted.

The figures given by the census in 1913 showed that in the United States 15,376 deaths were due to childbirth, and 6,977 of these were due to sepsis. Comparison of death rates from fifteen foreign countries with the United States shows that the latter stands fourteenth in the list, only two countries, Switzerland and Spain, showing a higher rate. Sweden, Norway and Italy show the lowest rates.

The author asks for the development of an "ob-

stetric conscience" in the physician with proper surgical training to meet the obstetrical requirements. L. R. GOLDSMITH.

Van Eman, F. T.: An Obstetric Résumé. *J. Missouri St. M. Ass.*, 1917, xiv, 503.

In a very comprehensive résumé of obstetrics, Van Eman has considered (1) normal cases with special reference to prenatal and postnatal care; (2) abnormal cases, with reference to various methods of delivery, both by the natural channel and otherwise; (3) the use of pituitary extract; (4) the conduction of the third stage of labor; (5) the conduction of the puerperium; (6) the management of the toxæmias; (7) the management of placental abnormalities prior to labor; (8) the relations of the patient to the accoucheur.

Normal cases naturally take care of themselves and the less interference is done, the better for all parties concerned.

Breech, face and transverse cases may be handled according to the methods laid down by the authoritative obstetricians, as all are pretty well agreed as to the best procedure in such cases. However, the proper management of occiput posterior is still an unsettled question. The author favors pushing up the head and by the combined manipulation rotating the head into the anterior position. When the head is firmly impacted, craniotomy is indicated in the interest of the mother. For obvious reasons, cæsarean is usually out of the question.

The dictum, "once a cæsarean always a cæsarean," the author believes, is worthy of the most serious consideration. Certain cases of placenta prævia, abruptio placentæ and eclampsia offer an indication for cæsarean section and the author prefers early section to the prolonged mutilating vaginal procedures for such conditions.

A word of warning is sounded regarding pituitary extract. Small doses often repeated are far preferable to one or more large doses. Three minims repeated three or four times during the first stage of labor is recommended.

In the conduct of the third stage of labor the author is in favor of removing the placenta if after the usual time and after failure of the Credé maneuver it does not come away.

If the asepsis is perfect and the hands are properly gloved and sterile, there should be no danger in manually removing the placenta. It is vastly safer for the patient than leaving the placenta inside the uterus.

"The best way to treat eclampsia is to prevent it," expresses the author's views upon this subject. Prenatal care should eliminate the occurrence of any real cases of eclampsia.

Placental abnormalities prior to labor are serious obstetric complications, and there is no "watchful expectancy" treatment. Once the diagnosis of placenta prævia or abruptio placentæ is made, pregnancy should be terminated. Cæsarean section is certainly indicated in selected cases of placenta prævia and abruptio placentæ.

In conclusion, the author makes a plea for better obstetrics and better fees, and offers the suggestion that "the surest and quickest way to raise the standards of obstetrics is to raise the fee for the work." H. B. MATTHEWS.

GENITO-URINARY SURGERY

KIDNEY AND URETER

Burns, J. E.: A New Method for Locating Small Calculi in the Kidney at Operation. *J. Urol.*, 1917, i, 559.

Sometimes great difficulty is experienced after exposure of a kidney in locating a small calculus, with consequent mutilation and irreparable damage to the kidney parenchyma. Splitting of the kidney increases the possibility of postoperative hæmorrhage.

The author has devised a method for accurate location of the stone. The prime essential is to have satisfactory roentgenograms. After exposure of the kidney, the plain roentgenogram is examined and by means of a straight liver needle or fine probe the operator measures off the distance from the shadow of the stone to the border of the pole of the kidney. This measurement is then transferred to the surface of the kidney. The same method is then employed in mapping out the distance of the stone from the convex border of the kidney. These two points should coincide and a needle inserted perpendicular to the surface of the kidney at this point should in its passage through the kidney come in contact with the stone.

H. W. PLAGGEMEYER.

Castano, E.: Calculus Anuria in a Solitary Kidney (Anuria calculosa en un riñon único). *Rev. Asoc. méd. argent.*, Buenos Aires, 1917, xxvii, 423.

In a man of 50 years with symptoms of renal lithiasis, the author made a pyelotomy. The left kidney was found enlarged, with an abundance of purulent urine in the pelvis. It was not possible to locate a stone in the kidney. The next day a small stone was found in the ureteral orifice which was spontaneously discharged. All attempts to obtain urine from the right side had failed, nor could any ureteral orifice be found by instrumentation or cystoscopy on this side.

During the first eight days after operation urine was discharged through the wound. On the ninth day it was possible to pass a sound in the left ureter and purulent urine was obtained. Afterward the urination was spontaneous through this ureter. The wound was completely closed forty days after intervention. Clinical tests satisfied the author that the right kidney was absent, due to a congenital cause.

W. A. BRENNAN.

MacGowan, G.: Exfoliative Cystitis. *Calif. St. J. Med.*, 1918, xvi, 21.

Exfoliative cystitis is a pathological process apparently arising in the course of vesical infection without any consistently definite or specific cause, though passive congestion with ammoniacal decomposition of the urine is present. It is much like an exfoliative dermatitis, but unlike the latter, accompanied by suppuration. There is bloody, foul, and purulent urine, increased frequency of micturition, irregular retention, and passage of gravel preceding the exfoliation. The capacity of the viscus is permanently diminished, and hence frequent urination is the rule in those cases that recover. The disease is much more common in females than in males, and has often been noticed as following passive congestion of the vesical mucosa in displacements and retroversion of the gravid uterus. In the male it has sometimes seemed to follow unclean instrumentation.

The author quotes a case in a woman where cystoscopic examination showed a dirty membrane coating all parts of the bladder mucosa, concealing the ureteral meatii, and from the vault hung many shreds "like stalactites in a cave."

The treatment of these cases is by reposition of the displaced uterus in the knee-chest position. The author has traced the occurrence of moderate grades of chronic cystitis to pressure of a prolapsed stomach and colon and has cured cases by posture and abdominal support.

In the presence of retained urine, an inlying De Pezzer or Malecot catheter should be used and the bladder cleansed frequently with one of the usual mild agents, while at the same time the kidneys should be kept active under forced water and moderate doses of benzoate of soda given to insure an acid urine being poured into the kidney pelvis. The bladder should be examined from time to time with an operative cystoscope and any loose membrane removed through it. Oil of sandalwood and hexamethylenamine are useful, once the membrane has loosened itself. If diphtheria were shown to be the cause, or a pseudo-diphtheria, the use of antitoxin would certainly seem rational. Vaccines have doubtful values. Cystotomy may be necessary for drainage. General hygienic measures, good food and a continuous vesical toilette are the measures best suited for obtaining relief.

In literature the mortality is from 20 to 25 per cent, and complete restoration of vesical comfort is unusual.

The author cites a case of membranous cystitis seen in consultation. The patient while recovering from a severe type of pneumonia was attacked with a severe cystitis. Examination showed continuous incontinence, and a residual very foul urine of about 50 ccm. A culture made from this grew a perfectly pure colon bacillus. An operating cysto-

scope located a number of loose pieces of membrane, together with a calculus which was crushed and removed. An ureteral catheter was passed into both ureters which were dilated. The urine of both sides was cloudy. Microscopical examination showed a little pus and a few colon bacilli on the right side, and on the left considerable pus, epithelium, débris, urates, indigo, and an occasional red blood-cell. She had hydronephrosis of both kidneys. The pelvis of both kidneys were washed out with a one-fifth per cent solution of silver nitrate.

A vaccine was prepared from the culture and the initial injection of 25,000,000 given at intervals of five days; the quantity was increased until it was 150,000,000. The bladder was cleansed twice daily by irrigation with mild antiseptic solution. Dribbling ceased and she regained vesical consciousness, but there was some residual urine; this disappeared following lavage of the kidney pelvis with 5 per cent silver nitrate. Her general condition has much improved but the bladder capacity has never exceeded 100 ccm. THEO. DROZDOWITZ.

Buerger, L.: Three Unusual Cases of Renal Tuberculosis. *N. Y. M. J.*, 1918, cvii, 6.

Buerger calls attention to the difficulty which may be encountered in diagnosing, at the time of the operation, tuberculous lesions of the kidney. He reports three such cases. In the first, bacilli of tuberculosis were isolated from the urine, there were characteristic symptoms of tuberculosis, and yet the kidney, even after removal, was practically normal to the eye. Only after several sections had been made through various parts of the kidney were ulcerative, cheesy lesions found involving one of the calyces. The ureter was in this instance markedly thickened.

A second case in which the parenchyma at the time of operation showed no change whatsoever showed, however, induration about one of the papillæ and near it a small oval ulcer of irregular contour with a slightly hæmorrhagic base. Elsewhere the pelvis seemed normal. This case illustrates an early case of tuberculosis of the kidney with no signs of involvement of the parenchyma, with dissemination of the process by way of the pelvic mucosa, rather than upward into the cortex or pyramids.

The third case was one in which a solitary papilla was markedly involved, with involvement of the wall of the calyx. Externally there was no evidence of tuberculosis nor did casual inspection of the bisected specimen reveal it. J. S. EISENSTAEDT.

Geisinger, J. F.: Renal Infection. *Am. J. M. Sc.*, 1917, cliv, 883.

Geisinger gives an analytical report of 80 instances of non-tuberculous renal infection. Fifty-four per cent of these cases studied bacteriologically harbor some member of the colon bacillus group, 34 per cent staphylococci and streptococci, while 16 per cent are mixed infections and give evidence that the colon bacillus is a secondary invader. Only one half of the series was studied bacteriologically.

The author considers that direct ureteral ascending infection occurs in very few cases, the lymph channel not commonly, while the hæmatogenous route is the method in a vast preponderance of cases.

He considers the coccus infections to be more severe, resulting in surgical complications more frequently and presenting a symptomatology not unlike that produced by the colon bacillus infections, but more severe. Blood cultures may be positive in either type of infection.

The coccus infection involving the cortex and that portion of the kidney distant from the pelvis, and not particularly concerned in the elimination of phenolphthalein, produces little or no microscopic changes in the urine or change of the functional capacity of the kidney as determined by the dye output.

With bacillary infections, however, the pelvis and convoluted tubules being primarily involved, pus, kidney elements and bacteria appear in the urine and the function is profoundly affected. Geisinger believes that most infections are bilateral.

Thirty per cent of his cases presented no etiology, 20 per cent had a chronic constipation, pre-existing foci occurred in 10 per cent, while anomalies and pre-existing pathology of the kidney were noted in 13 of the 80 cases studied.

In 70 per cent the infection was bilateral, the unilateral cases being either of the septic infarct type of infection, or presenting some pathology which interfered directly with the vitality of the kidney, such as strictured ureter, third pelvis, stone in the pelvis or ureter, mobility, or kink. In the bilateral cases, however, the infection is commonly predominant on one side.

The first symptom was pain in 46 per cent of the cases; bladder disturbance, 32 per cent; fever, 6 per cent; vomiting, 4 per cent; general weakness, 2 per cent.

Bladder disturbance occurred in 86 per cent of the cases; 77 per cent had pain of varying degree, usually over the lumbar region, but sometimes over the bladder, throughout the entire abdomen, under the costal arches, in the inguinal region, and across the sacrum.

Chills and fever were present in 54 per cent; gastro-intestinal disturbances, 43 per cent; malaise, 40 per cent; pyuria was present in all but one instance and that a perinephritic infection; hæmaturia was present in 10 per cent.

Renal function tests are so variable that they are hardly reliable in giving a prognosis.

Forty per cent of the bladders are normal cystoscopically, while the others vary from congestion of the trigone to marked generalized cystitis.

As to the treatment, such conditions as perinephritic abscess, pyonephrosis and infected stone must be dealt with surgically according to the circumstances, while stricture of the ureter will have to be dilated cystoscopically.

Cases without gross complications demand individual decisions as to treatment. Surgery should only be used as a last resort; such kidneys often have a marked reactive power, and such should always be considered. Geisinger refuses to recommend anything more serious than pelvic lavage in these cases until that procedure has been tried.

For chronic bacillary infections and others not of the fulminating type, the most valuable internal medication consists of draughts of pure water. Antiseptic drugs are disappointing, especially the formaldehyde-carrying drugs. He suggests that methylene blue and quinine be tried.

Vaccines are disappointing as used by Geisinger, while the treatment of most value is pelvic lavage. He does not agree with the idea that ureteral catheterization dislodges infected masses and thereby causes drainage, which is the sole benefit produced by a pelvic lavage.

For lavage either silver nitrate or formaldehyde is used, the silver nitrate being the most effective, used in 1 per cent solution; he finds this as effective as stronger percentages.

Certain chronic infections cannot be completely removed by lavage or by anything but surgical removal; however, temporary improvement can always be had by lavage, so that by previous treatments the infection can be held under control.

HARRY CULVER.

Tenney, B.: The Recognition of Surgical Kidney. *Boston M. & S. J.*, 1918, clxxviii, 44.

Surgical kidneys are those whose symptoms can be relieved or cured by mechanical means. With some pathological conditions which fit into this group there may be a presurgical state where the course of the disease may be favorably influenced.

Proper interpretation of symptoms suggestive of surgical disease in the upper urinary tract is not always easy. Concealed by vague and misleading descriptions they are labeled pelvic, orthopedic or digestive when they belong to the urinary tract.

All agree that urinary stone, cancer of the kidney, and hydronephrosis are surgical conditions, also renal tuberculosis. There is less agreement about pyelitis. The symptoms which may turn attention to the urinary tract are frequent urination, blood or pus in the bladder urine, urgency or incontinence, and tenesmus.

If associated with these, recurring pain or discomfort in the loin may suggest trouble above the bladder. Variable temperature, loss of weight and the presence of albumin are additionally suggestive.

Frequency depends upon the relation of working bladder capacity to kidney excretion. The pressure of a tumor outside the bladder or increased pull of the ureter will diminish the working bladder capacity more or less according to posture or activity.

The presence of pus or blood in bladder urine is most important, but the source is sometimes difficult to locate. The presence of either is more a serious symptom than moderate frequency, and the three combined more serious yet. The probability of stones, tuberculosis, or new-growth increases with the length of time this combination exists.

Incontinence without urgency implies a weak sphincter from injury or disease. Urgency seems to be associated with irritation of the trigone or the lower ureteral fibers. Tenesmus is a further exaggeration of urgency, continuing after the bladder is emptied of fluid.

Kidney diseases are painless unless there is obstruction to the flow of urine. Unilateral pain is a symptom of stone when the stone blocks the ureter, of tuberculosis and cancer when a clot is passing down or intermittent hydronephrosis when the ureter is kinked, and of acute infections when there are multiple retentions of urine within the kidney substance.

Variable temperature is common. In acute infections it may be high and in old infection subnormal or variable.

Loss of weight corresponds with pain, loss of sleep and lack of appetite.

Cystoscopy, study of separate urines by microscope and color test, guinea-pig inoculation, and X-ray examination may all be required for complete diagnosis.

The conditions under which these symptoms may develop are pyelitis, hydronephrosis, stone, tuberculosis and cancer of the kidney, also pyonephrosis and acute hæmorrhagic nephritis. Most of these are associated with infection and the cause and path of the infection are important.

When the equilibrium between intake and increase of bacteria and their excretion or destruction is upset, health failure occurs. Pressure upon the renal vessels by inflammation or adhesions may result in disturbed renal function. Ligation of the ureter produces marked venous congestion and slowing of the blood stream. If active bacteria are present in the blood stream a septic thrombus results which may become the calcified nucleus of a stone, the beginning of a pyonephrosis, or it may disappear.

With intermittent ureteral obstruction one may assume a lesser degree of the same anatomical changes, and the bacteria, white and red blood-cells, and round cells give the sediment picture of pyelitis. With virulent bacteria present, a more acute general reaction with high temperature, acute pain, and prostration may occur, with the sediment of acute hæmorrhagic nephritis.

"Hydronephrosis" is applied to all cases where pain is caused by retention of urine in the pelvis.

A half-ounce may cause severe pain in one case, while another may tolerate a pint. Much of the knowledge of the smaller hydronephrosis is obtained by pyelography. Absence of one-sided pain in a recumbent position and its reappearance a half-hour after arising is a suggestive symptom, and more common than repeated urination after lying down.

Kidney stones cause pain only when the ureter is blocked, and stone in the ureter may cause reflex irritation but not much pain unless it obstructs.

X-ray plates have shown many unsuspected stones and have also failed to detect some that were present.

It is usually possible to diagnose renal or ureteral stones, though not always; but it is always possible to diagnose renal obstruction.

Renal tuberculosis should be recognized earlier than it is. A swollen epididymis may be the earliest sign. Others may have albuminuria, urinary frequency, hæmaturia or recurrent periods of acute bladder symptoms. Early diagnosis of renal tuberculosis is possible except under two conditions, i.e., if the urine is collected when no bacilli are coming through, or if the ureter is blocked, so that no bacilli will be found. The guinea-pig test is more delicate, but if negative should be repeated.

A tuberculous kidney is hopeless. Early operation is as necessary as in cancer. Early recognition and nephrectomy are essential for a cure.

The recognition of surgical kidney occurs later than it should. Too many physicians treat bladder symptoms without looking into the cause. The bladder is more frequently an indicator of disease above or below it than a primarily diseased organ. Recognition of this should enable one to diagnose renal tuberculosis, lithiasis, and all degrees of pyelitis and pyonephrosis more frequently and much earlier. H. G. HAMER.

Johannessen, C.: Surgical Treatment of Wandering Kidney (Vandrengrens kirurgiske behandeling). *Norsk Mag.*, Kristiania, 1917, lxxviii, 1017.

Johannessen operated in 11 cases of wandering kidney, all occurring in women, following Rovsing's technique which, according to its author, gave 85 per cent of recoveries in the last series of 107 cases, and 50 per cent of recoveries in complicated cases. Johannessen compares the results obtained by other operators, which do not show more than 75 per cent of recoveries in uncomplicated cases.

All of the cases operated upon by Johannessen involved the right kidney. Of 7 uncomplicated cases, 6 were cured and one was much improved. Four with gastroptosis were improved and 2 cured.

He recommends careful examination of the kidney for calculi, etc., before fixing it; also the administration of something to maintain peristalsis after the operation. W. A. BRENNAN.

McNeill, W. H., Jr.: Two Cases of Inflammatory Stricture of the Right Ureter Due to a Pelvic Abscess Following Ureterotomy of the Left Ureter. *N. Y. M. J.*, 1917, cvi, 786.

The author reports two cases of inflammatory stricture of one ureter due to pelvic abscess following ureterotomy for stone in the opposite one. He regards these cases as surgical failures and emphasizes the hazard in any open operation for the removal of stone in the ureter. Both patients underwent prolonged stay in the hospital, and one required nephrotomy for relief; the other will require nephrectomy before clinical cure is accomplished.

J. S. EISENSTAEDT.

BLADDER, URETHRA, AND PENIS

Watson, E. M.: Notes on the Recognition of Certain Lesions of the Male Bladder. *Ann. Surg.*, Phila., 1918, lxvii, 96.

The author takes up briefly the diagnosis and treatment of the commoner lesions of the male bladder. He states that the success in the treatment of these conditions almost invariably depends upon the ability of the observer to interpret correctly the cystoscopic findings.

Prostatic changes are either hypertrophic (benign) or non-hypertrophic. The following hypertrophic conditions of the prostate may be determined: (1) middle and lateral lobe involvement; (2) Albarran lobe involvement; (3) subtrigonal gland involvement. The non-hypertrophic conditions of the prostate which are recognizable are: (1) median bar formation; (2) median bar with circular fibrosis. Cysts of the prostate may also be determined cystoscopically.

True hypertrophy of the trigone is a muscular hypertrophy, and is usually secondary to some type of obstruction situated directly at the vesical orifice.

Bladder changes due to spinal lesions are recognized cystoscopically by the condition of the bladder wall and by the dilated condition of the internal sphincter.

The study of bladder tumors is a most interesting and important one cystoscopically. Clinically and practically the main issue is to determine whether the tumor is benign or malignant.

Vesical calculi are readily and quickly diagnosed cystoscopically by their characteristic brownish or white color, by their mobility in the bladder and by their hard consistency when touched with the end of the cystoscope.

Diverticula are usually noted cystoscopically before they are demonstrated by other means.

Primary tuberculosis of the bladder may be said to be extremely rare.

Accompanying practically all of the lesions mentioned above, particularly if they have existed for any length of time, there is usually a certain amount of cystitis. This may be either a generalized cystitis, causing a hyperæmia of the bladder mucosa, or a localized inflammation occurring most frequently on the posterior wall and vertex of the bladder. This latter form of cystitis exists often as a definite ulcer with an elevated puckered mucous membrane with broken edges. E. C. ROOS.

Martin, S. P.: Dumb-Bell Stone in the Diverticulum of the Urinary Bladder. *Ann. Surg.*, Phila., 1918, lxvii, 94.

A review of the literature of the past ten years on diverticula of the bladder discloses only few references to instances in which stones have been found in a diverticulum. Thomas, in a recent complete study of all cases of diverticula examined in the Mayo Clinic during the past eight years, reported 27 cases. In only three were stones found.

Two of these each contained a single stone, while the third contained several small stones, but none were dumb-bell in shape nor of large size.

The author reports an interesting case from the Mayo Clinic of a huge dumb-bell shaped stone found in a diverticulum of the urinary bladder on the right posterior wall, the smaller half of the dumb-bell extending into the bladder itself. The X-ray showed a dumb-bell shaped shadow in the right side of the bladder, but the cystoscopic examination showed a stone, not so large, fixed to the right posterior wall of the bladder and apparently protruding from a diverticulum.

The patient had had acute retention of urine twice in seven years, and practically the only other symptom he had during this time was a sudden shutting off of the stream during urination. His bladder never felt completely empty, and during the last year he used a catheter once a week.

A cystotomy was performed, the stone removed and the diverticulum excised. The patient made a complete and uneventful recovery. E. C. Roos.

The Treatment of Bladder and Urethral Wounds, and of Kidney and Ureter Wounds at the Front and at the Base (Traitement d'urgence des plaies de la vessie et de l'urètre; traitement des plaies du rein et de l'uretère dans la zone des armées et à l'arrière). *Presse méd.*, Par., 1917, p. 706.

A meeting of the chiefs of urologic service for the French army was held at Val-de-Grace in May, 1917. Legueu, Cathelin, Jeanbrau and others attended. The following conclusions were adopted:

BLADDER WOUNDS

1. Bladder wounds from gunshot are of considerable immediate gravity due in great part to the peritoneal and intestinal lesions which very frequently accompany them.

2. The ideal treatment of bladder wounds by suture of the orifice can be done only exceptionally; the results are not what might be expected from it.

3. Patients with bladder wounds reaching the base belong essentially to two classes: those who have been cystotomized and those who have undergone no vesical treatment.

4. Immediate cystotomy appears to be the best surgical treatment of bladder wounds.

5. Enterostomy in the case of vesico-intestinal fistula appears useless in the majority of cases; it has only very limited indications.

6. The cystotomized patients should be evacuated very rapidly into urologic centers of the army, whenever it is certain that the bladder wound is not coincident with an intestinal wound which prohibits early evacuation.

7. All patients with bladder wounds evacuated to the interior should be sent to an urologic center.

WOUNDS OF THE URETHRA

1. Patients with urethral injuries should, if possible, be sent at once to urologic centers.

2. Immediate suture of urethral wounds, always a long and delicate operation, should only be attempted when associated with habitual suprapubic urinary deviation.

3. Simple evacuation by suprapubic cystotomy associated with a wide opening up of the traumatized area suffices as an immediate measure in the majority of cases.

4. All patients with urethral injuries sent to the interior should be evacuated to an urologic center.

WOUNDS OF THE KIDNEY AND THE URETER

Treatment at the front is outlined as follows:

1. Immediate intervention in kidney and ureter injuries is only indicated when there is an important hæmatoma, a profuse or prolonged hæmaturia or the presence of an intrarenal projectile. Flow of urine through the wound does not of itself indicate an immediate nephrectomy.

2. When intervention is decided upon, it ought be as conservative as possible, and nephrectomy should only be done when absolutely necessary.

3. In cases where there is doubt concerning the existence of an ureterorenal lesion, the hospital records and observation chart should mention all symptoms likely to clear up an ultimate diagnosis.

The principal operations likely to be carried out at the base may be summed up as follows:

1. Extraction of foreign bodies, even small, not removed at the front.

2. Operations for purulent non-urinary fistulæ.

3. Operations for renal or ureteral fistulæ, which have resisted expectant treatment either alone or aided by repeated or continued ureteral catheterization.

4. In certain cases of pyuria treated unsuccessfully by ureteral and pelvic lavage a temporary nephrotomy might be tried.

AUTOPLASTIC OPERATIONS IN URETHRAL FISTULA

1. It is necessary to repair every external deformity or mutilation consecutive to war wounds, not only from the moral and æsthetic viewpoint, but also from the social and economic.

2. It is necessary to send these cases to the territorial urologic centers on account of the long pre-operative treatment and the different procedures possible.

3. It is necessary to evacuate such patients from interior general hospitals to centers for urological plastic operations.

4. It cannot be said that there is any one method of treatment for urethral fistulæ. If the method of inversion gives excellent results, especially in small fistulæ, the different "dedoublement" methods, strip autoplastics or mucous transplantations ought not to be forgotten, especially in cases with large destruction of the urethral walls.

5. Experience having established the superiority of urinary deviation or of intermittent catheterization, such methods ought be preferred to the retention catheter.

6. Later, if necessary, patients with wounds of the genito-urinary organs operated upon can be evacuated to the centers where they have been treated in order to unify methods of treatment.

7. In the case of extensive mutilations and in cases of almost complete penile section, the method of conservation should be applied from the beginning; a primary amputation should never be made.

8. In those operated upon immediately at the front, the opening up may be as extensive as is required; but there ought to be no excisions because all particles of adherent skin are of great use in the course of later autoplastics.

9. In the majority of cases, those patients with fistulous wounds of the urethra treated by autoplastics are re-available for military duty. Fistulæ of the posterior urethra are excepted.

W. A. BRENNAN.

Mayo, C. H.: Exstrophy of the Bladder and Its Treatment. *J. Am. M. Ass.*, 1917, lxix, 2079.

The author enphasizes the seriousness of this malformation, and describes the associated pathology.

He discusses the various measures employed for improving this condition. Methods of plastic closure are defective because of the necessity of the use of hair-growing skin, adding to the foulness of the uncontrolled bladder. The septic condition of the bladder has resulted from the use of other earlier methods of relief, Use of other closed cavities, as the cæcum, sigmoid or rectosigmoid as a substitute for the bladder, all have resulted in ascending infections.

The author describes the various methods that have been devised to guard against this. These include insertion of the ureters into the sigmoid colon in such a manner that the fæcal content does not pass directly over the ureteral ends, and preservation of a portion of the bladder mucosa, including the ureteral orifice, and its transplantation into the rectal wall to preserve the natural safeguard against infection. The latter method fails from the fact that lack of innervation causes a loss of tone in the muscularis which is essential to this mechanism.

A successful method of guarding effectively the ureteral orifice by tubularizing the ureteral entrance through the bowel wall is described in detail.

The lower end of the large bowel should be used for the site of transplantation because of its lower absorptive powers. One ureter should first be transplanted, and one to two weeks be allowed for tolerance to be acquired to the urine in the bowel, before the second one is transplanted.

This operation is most successful in children of three and one-half to five years of age, at which time they can attend to their own needs. Operation has resulted in giving satisfactory function by this method.

V. E. DUDMAN.

GENITAL ORGANS

Villa, I. de la: A Tumor in an Ectopic Testicle (Un caso de tumor en testiculo ectopico). *Rev. clin. de los hosp.*, Madrid, 1917, ii, 41.

The case occurred in a man thirty-four years old who had a hernia since infancy. The scrotum contained but one testicle. He was operated upon with the dual object of treating the hernia and of restoring the ectopic testicle to its position. The hernial sac showed two lobules, the lesser in the scrotal base of the cutaneous orifice of the inguinal canal. The larger projected into the cellular tissue of the abdominal wall. The sac contained fluid only, and was removed without difficulty. The orifice of communication with the abdominal cavity was large. In seeking the aberrant testicle a tumor was found which extended into the abdomen, the limits of which could not be fixed by the exploring finger.

The abdominal wall was incised in order to make a better exploration. On palpation it was found that the canal terminated in the tumor, and there was therefore no doubt that the case was one of a tumor of an ectopic testicle. The tumor was traced to the lesser pelvis in the space between the bladder and the rectum. It was easily separated from the posterior wall, but behind and above there were firm adhesions which could not be detachad. It was removed entire after section and ligation of the spermatic cord.

Although a detailed microscopic examination was not made, examination of the tumor showed it to be sarcomatous. The tumor gave no symptoms, either subjective or objective, to denote its presence.

W. A. BRENNAN.

Vivian, C. S.: The Treatment of Gonorrhœal Epididymitis Complicated by Peri-Epididymitis. *Ann. Surg.*, Phila., 1918, lxvii, 103.

The author briefly mentions the history of the development of epididymotomy, calling particular attention to the technique described by Hagner. If the temperature falls to normal in forty-eight hours after operation and remains normal, the method is considered adequate, but if temperature persists, more radical measures should be adopted in certain cases. Obstinate cases treated expectantly for several weeks develop inflammatory adhesions between the testicle and epididymis and the tunica. Virulent acute cases if not immediately relieved produce similar pathology. These two classes relapse repeatedly or drag on indefinitely under expectant treatment.

The technique is as follows: Under general anæsthesia the scrotum is opened and the reddened, thickened and friable tunica separated from the underlying structures, laying bare both testicle and epididymis. The tunica is sutured behind the testicle as in the bottle operation for hydrocele. The epididymis is punctured with a blunt probe and silkworm suture drain inserted to be removed in

forty-eight hours, and the scrotum closed down to the drain. Immediate relief of pain is the rule and the temperature reaches normal in thirty-six hours. Hydrocele, frequently a bothersome complication, is adequately dealt with.

The author draws the following conclusions: Epididymitis of long standing develops what might be called peri-epididymitis, which is best treated by the radical method described. The epididymis has an opportunity to return to more nearly its normal size. This method has the advantage of the other surgical measures without danger of relapse. It provides the most free drainage possible. Fulminating acute cases and cases which have been unsuccessfully treated in other ways are best suited for the procedure. H. G. HAMER.

Barragan, M.: Prostatic Infections Exclusive of Gonorrhœa (Estudio de las infecciones prostaticas con exclusion de las blenorragicas). *Med. Ibera*, Madrid, 1917, i, 3.

Barragan has met with 44 cases of prostatic infections, exclusive of gonorrhœa and tuberculosis. Thirty-six cases of prostatitis were consecutive to catheter infection or due to the catheter taking a false route; 3 were due to rectal infections, 3 due to foreign bodies in the urethra, and 2 were due to descending renal and bladder infections.

Of these 44 cases, 9 were followed by abscesses, 4 of which were operated upon by the perineal route and 1 by the rectal route. The other four opened spontaneously, 2 into the urethra, 1 into the bladder, and 1 into the rectum. In the 44 cases there were 2 deaths due to septicæmia.

The author treats the symptoms at length. He thinks that the majority of prostatic inflammations are best treated medically, but when operation is indicated, the perineal route is that of choice, as the rectal approach, although easier, is more exposed to the danger of hæmorrhage.

In the discussion on this paper, many other cases of non-gonorrhœal prostatic infections are reported. The paper was read at the Fourth Congress of the Association Española de Urologia which met at Madrid last October. W. A. BRENNAN.

Suter, F.: Results of Suprapubic Prostatectomy (Die resultate der suprapubischen prostatektomie). *Cor.-Bl. f. schweiz. Aerzte*, 1917, xlvii, 1220.

In 75 cases operated upon by Suter by the Freyer method there have been 5 deaths, or a 6.7 per cent mortality. In his first 16 cases there were 2 deaths; then no deaths in a series of 40 cases; and 3 deaths in the last series of cases. One death was due to embolism, 2 to renal insufficiency and 2 to cardiac insufficiency.

The greatest danger in such cases is from cardiovascular affections. Hæmorrhage is also a conspicuous factor and none of the various methods in use against it constitute a guarantee.

In the average of Suter's cases a period of four or more weeks lapsed before cicatrization. A fistula rarely called for a new intervention. No recurrences of the new-growths were observed.

W. A. BRENNAN.

Pauchet, V.: Systematic Closure of the Suprapubic Wound in Prostatectomy (Prostatectomie: fermeture systematique de la plaie suspubienne). *Presse méd.*, Par., 1917, p. 729.

In Freyer's operation, according to Pauchet, the wound requires from three to eight weeks to close, and even longer when the operation is done in two stages.

By a technique which he describes and illustrates, Pauchet says that complete cicatrization can be obtained in from twenty to twenty-two days by following a systematic closure of the wound.

After the prostatic intervention the bladder wall is closed by two non-perforating U-sutures with No. 0 catgut and these are knotted. The bladder mucous lining is not included in the suture.

Three sutures of silkworm gut are taken in such a way that each forms a figure eight. These bring the rectus edges together, at the same time approximating the cutaneous edges. They are passed through the rectus muscle and twice through the outer bladder wall. The skin wound is closed by Michel clips. A compress is applied over the clips and the silkworm gut passed and knotted over the compress.

After operation a Marion drain is fixed and remains for nine days. On the tenth day it is replaced by an urethral sound for three days. The suprapubic wound can then be sutured. After suture a new retention catheter is fixed and remains eight days. On the twenty-first or twenty-second day this sound is withdrawn, as well as the suprapubic sutures. This method has always been successful. It was first used to combat urinary fistulæ in wounds which showed very retarded cicatrization. The constant success of secondary sutures had encouraged the author to systematically practice it early in all his operations of this kind.

There may be some urinary complications but they usually clear up if the prostatic excision has been correct and complete.

Pauchet calls particular attention to the desirability of not leaving any particle of prostatic débris, and to leave the cavity clear. If not, the recovery may be protracted by complications.

Pauchet has operated in 477 prostate cases. In his last series of 40 there has been no death, though the cases accepted are constantly becoming more of a risk as regards the heart and kidney conditions.

In the two-stage operation, the patient is restricted to a non-nitrogenous diet as far as possible, but otherwise lives his normal life. When the surgeon deems his physical condition in every way satisfactory and his resistance good, the time for the secondary prostatectomy is fixed.

W. A. BRENNAN.

SURGERY OF THE EYE AND EAR

EYE

Allport, F.: The Removal of Steel Particles from the Interior of the Eye by the Magnet. *Illinois M. J.*, 1917, xxxii, 395.

Unless the foreign body is quite apparent, it is often believed there is nothing in the eye; and X-ray pictures, even though not infallible, should always be taken in view of possible subsequent litigation.

The author deprecates intra-ocular procedures for extraction, though he admits that some eyes have been saved by such methods, since the particle, if not removable by a powerful magnet applied to the lips of the wound, is either behind the eye or stuck fast in its coverings and had best be left alone.

It is unwise to use the magnet for diagnosis as it creates too much intra-ocular disturbance if steel is there, and a diagnosis can be made better by gentler and surer methods.

An eye which shows a wound of cornea, sclera or lens may have nothing in it; a long particle may have produced the wound and then have been removed by winking or otherwise.

Where a large particle has entered the eye enucleation had best be done at once. Haab advocates the anterior portion of eye as the route for removal, but the author disagrees; in his experience scleral incisions are much safer and easier than endeavoring to draw the particle over the ciliary processes, around the lens and through the pupil and corneal incision.

The Victor and Sweet magnets are recommended as an equipment.

Subject to modifications, the author's method of extracting foreign particles is:

1. If the particle is in the lens or anterior to it, extract through the cornea, massaging and washing out the injured lens matter.

2. If the particle is posterior to the lens, make a triangular conjunctival flap with the apex forward and incise the sclera with a Graefe knife between and in the direction of the muscles, placing the magnet in a position judged best after careful study of X-ray plates. S. S. Howe.

Calderado: Clinical, Anatomic and Bacteriologic Researches on the Lachrymal Glands (Sul estirpazione della ghiandoli lacrmali). *Ann. di ottal.*, Roma, 1917, xl, 35.

Calderado's results are as follows:

1. The abundant and continuous epiphora persisting after destruction of the lachrymal passages depends in the majority of cases upon abnormal hypersecretions of the lachrymal glands.

2. This disturbance ceases on the removal of the orbital lachrymal gland and more certainly with the removal of its palpebral part.

3. Such intervention is easy and rapid and is always efficacious since at the same time it suppresses the function of the orbital gland by destruction of its secretory canals.

4. The lubricant fluid of the conjunctiva which contains traces of albumin is always kept alkaline by the presence of chlorides after removal of one of the two glands.

5. The removal of the orbital gland reduces the quantity of lachrymal secretion below the physiological limit and explains the function of the gland for the continuous lubrication of the conjunctiva.

6. After removal of the orbital gland or the palpebral gland, the conjunctiva is insufficiently lubricated from 2 to 6 days. This is compensated in time by hypersecretion of the subconjunctival glands. In inveterate trachoma alterations of the subconjunctival glands are never absent; they may atrophy and disappear. Removal of either gland exposes the eye to parenchymatous dryness.

The palpebral gland may safely be removed when the conjunctiva is normal; it is always contraindicated in extensive and deep forms of cicatricial degeneration of the conjunctiva by trachoma, etc., in such cases conservative surgery such as Toti's operation is preferable.

The microbic contents of the conjunctiva in the case of abundant epiphora consecutive to removal of the lachrymal sac are slight and inactive; after the removal of one of the glands there is an increase. When the conjunctiva is affected by chronic trachoma, the microbe content is greater, so that the integrity of the cornea may be menaced.

W. A. Brennan.

Carr, A. M.: Tension in Normal Eyes Before and After Tonsillectomy. *Arch. Ophth.*, 1918, xlvii, 46.

Observing that cases of iritis with secondary glaucoma had shown improvement in the iritis and marked lowering of tension within twenty-four hours after the removal of abscessed tonsils, observations were made with the Schiotz tonometer on one hundred cases to determine exactly what effect the operation had on previously normal eyes.

Tension was taken a few hours before and twenty-four hours after removal of the tonsils.

In two cases of secondary hæmorrhage there was a considerable degree of exsanguination.

In 95 per cent there was no variation between the reading before and after greater than 2 mm., which is in the range of the normal error of observation.

No case showed a variation of more than 5 mm.,

and the author feels justified in concluding that tonsillectomy, even when accompanied by considerable hæmorrhage, does not have any effect on normal intra-ocular tension. S. S. HOWE.

Monson, S. H.: Care of the Eyes of School Children. *Ohio St. M. J.*, 1917, xiii, 813.

The author recites the program followed in the Cleveland schools in testing and taking care of the eyes of school children.

In the first place, an eye clinic has been established at one of the schools where the children's eyes are refracted and the usual follow-up system by the nurse is detailed.

In the second place, room is made for educating the blind in the public schools.

In the third place, a special center is established for those children whose vision is so defective that they do not see enough to do the work in the regular classes, and yet have enough vision so that they need not be taught to read with their fingers.

These classes are called the conservation of vision classes and include: (1) myopes of eight or more diopters; (2) children having macula or leucoma of the cornea with vision less than 6:15; (3) hyperopes of more than eight diopters of hyperopia and having symptoms of asthenopia; (4) congenital cataract cases which have been operated upon, whose vision is 6:15 or less; (5) children who can not read more than 6:30 at a distance; (6) children with interstitial keratitis, uveal or corneal disease, who are under treatment and have been temporarily withdrawn from the regular classes.

Lately a trachoma school has been organized for children suffering from this disease.

OTTO M. ROTT.

Byers, W. G. M.: Elliot's Operation; Complications and Unfavorable Results. *N. Y. St. J. Med.*, 1917, xvii, 545.

Referring to Elliot's operation as a rational and effective method of combating some, if not all, types of glaucoma, the author discusses the complications, and the methods of meeting them, with observations in regard to their causation.

In expulsive hæmorrhage, the author advocates Verhoeff's procedure of pressure over the trephine hole to arrest the flow of vitreous, with immediate angular scleral punctures combined with the excision ot tongues of sclera to insure permanent drainage, and injections of normal salt solution into the vitreous to force the choroid back into place.

In malignant glaucoma, developing during or shortly after operation, Weber's method of making a posterior sclerotomy followed by steady pressure with a curette over the cornea to force the lens backward, re-establish the anterior chamber and re-open the spaces of Fontana, is recommendde, If Weber's method fails, extraction of the lens and rupture of the hyaloid membrane, as suggested by Smith, is the only recourse.

Among causes underlying a return of tension, down growth of surface epithelium into the anterior chamber is mentioned, and to prevent this Elliot insists on a conjunctival flap of such a size that the upper edge is so far removed from the trephine hole that epithelium cannot grow into the opening.

As the endothelial cells lining Decemet's membrane prevent the filtration of aqueous into the tissues of the cornea, it is essential to drainage that the break in them be maintained, and hence a trephine hole of at least 1.5 mm. must be made.

Trephine wounds of the cornea are much like similar openings in the iris, in that there is little disposition to closure, and so the hole must be made in part at least in the cornea, faulty position in this respect being the chief cause of failure.

The author criticises the use of wet instruments, contending that infection is often thereby carried directly into the eye, and he objects to irrigation of the conjunctival sac after operation, for the same reason. S. S. HOWE.

EAR

Abrand, H.: Traumatisms of the Auditory Apparatus (Étude sur les traumatisms de l'appareil auditif). *Rev. de laryngol.*, Par., 1917, xxxviii, 433.

Abrand presents a detailed study of the traumatisms of the ear in war, especially those due to explosions. He deals particularly with the traumatic pathology of the drum and tympanic cavity, giving the various types of lesion which occur. The methods of examination and tests to be applied are described with typical cases.

Infection occurring in connection with a traumatism may originate in three ways: (a) It may occur as the result of infective agents from the soil, etc., entering the ear; (b) it may be the re-awakening of an old infection; (c) it may be the result of improper lavages.

The author reviews the various prophylactic measures suggested to guard against infection and indicates active treatment to be observed when infection has occurred. W. A. BRENNAN.

Blackwell, H. B.: The Complete Mastoid Operation. *Ann. Surg.*, Phila., 1917, lxvi, 640.

The distinctive features in the author's technique are: (1) the curettement of the attic; (2) light packing of the wound; and (3) daily dressings.

The author's purpose in adopting these procedures is:

1. To prevent as much as possible the development of those serious intracranial and other complications which sometimes follow an inflammation of the mastoid or an operation for its relief.

2. To reduce the time required for the healing of the mastoid wound, which varied from three to five weeks.

3. To render the dressing as painless as possible.

4. To improve the appearance of the healed wound. The depression is scarcely noticeable.

OTTO M. ROTT.

SURGERY OF THE NOSE, THROAT, AND MOUTH

NOSE

Gleason, E. B.: The Treatment of Suppuration of the Accessory Sinuses of the Nose. *Laryngoscope*, 1918, xxviii, 1.

The author makes a plea for non-operative treatment of suppurative conditions of the accessory sinuses by substituting the suction apparatus for the knife.

He states that he obtains entirely satisfactory results and that he has done no operative work, except on the antrum, since using the suction apparatus.

Case-reports of the following conditions are appended in order to illustrate the results obtained:

1. Severe acute frontal sinusitis.
2. Acute suppuration of the anterior ethmoid cells with an orbital abscess.
3. Acute suppuration of the right frontal sinus.
4. Chronic suppuration of the frontal sinus, anterior ethmoid cells and antrum.
5. Chronic suppuration of the left frontal sinus.
6. Chronic suppuration of the posterior ethmoids and sphenoids.

OTTO M. ROTT.

Stein, O. J.: A Case of Nasal Sarcoma Cured by Radium. *N. Y. M. J.*, 1917, cvi, 1075.

Following the completion of the treatment of this case by radium, there was an opportunity for a postmortem study, the patient having died from an unrecognized suppurative appendicitis.

The case was first seen in July, 1916. At that time, the patient was anæmic and poorly nourished. The right eye protruded so that the lids could not cover the ball. The anterior nares were excoriated from nasal discharge, the nasal bridge was widened, and the surrounding tissues thickened. There was occlusion of the nares, the patient being a mouth breather. The right nostril was blocked by a pale-colored hard mass which showed beginning necrosis. There was a large, painful mass of cervical lymph glands on the left side. The patient's age, history, general appearance, local findings and microscopic findings all supported the diagnosis of a sarcoma of the round cell type.

The attempt at surgical removal was a failure, and radium treatment was undertaken. From September 25 to January 27, treatment was given to the primary growth and also to the secondary involvement of the cervical glands, a total of 4,100 milligram hours being given about the nose and 2,125 milligram hours about the large glands.

At the last examination, there was no evidence of a tumor. The general condition was improved and local symptoms were entirely relieved.

At the postmortem a most thorough examination was made of the skull and accessory sinuses, and no evidence whatever could be found of the new-growth. The author's opinion was that there had been an absolute cure of the sarcoma.

W. A. EVANS.

THROAT

King, J. J.: Systemic Conditions as the Result of Tonsillar Infections. *Med. Clin. N. Am.*, 1918, i, 799.

The author reports two cases:

The first patient had an acute endocarditis, valvular disease complicated by pericarditis with effusion; the focus of infection was in the tonsils. He was gradually getting worse under ordinary treatment, i.e., digitalis, sodii salicylate, bicarbonate of soda, etc.; but after he received vaccine improvement began. Autogenous vaccines from the staphylococcus albus were given. The patient felt so well that he refused to have the tonsils enucleated.

The second patient had a chronic infectious arthritis, and a gram-negative diplococcus infection of the tonsils. Under autogenous vaccine treatment, 200,000,000 three times a week, great improvement resulted. After the activity of the infection ceases, the tonsils are to be enucleated.

OTTO M. ROTT.

Isaacs, H. E.: Stenosis of the Nasopharynx; Operation with Prosthesis. *Laryngoscope*, 1917, xxvii, 885.

The method employed to maintain the opening was by means of an appliance consisting of a pair of wire spring holders, fitted to the molar teeth on each side of the upper jaw, joined by a bar fitting into the arch of the palate. From this bar two wires run back to the nasopharynx and support a vulcanized rubber tube, made into a form conceived to be that which the operative opening would measure.

OTTO M. ROTT.

MOUTH

Toomey, N.: Congenital Paramedian Sinuses of the Lower Lip. *Arch. Pediat.*, 1917, xxxiv, 924.

Toomey reports an interesting case of paramedian sinuses of a female child eight months old, full term and normal delivery, having a complete cleft of the hard and soft palate, a double harelip complicated by a sinus on each side of the median line of the lower lip, which upon squeezing yielded a small amount of clear mucus. Just in front of the sinus openings were hemispherically raised areas about four mm. in diameter. Toomey gives a résumé of the bibliography of this abnormality involving the lower lip.

M. N. FEDERSPIEL.

Trotter, W.: Suggestions Toward a Systematic Operative Treatment of Gunshot Wounds of the Mandible. *Brit. M. J.*, 1918, i, 49.

The treatment of gunshot fractures of the mandible can not as yet be regarded as wholly satisfactory.

From the number of these cases that reach the London general hospitals, it seems that the difficulties, both as to asepsis and plastic work, met with in these cases are closely similar to the difficulties met with in malignant disease in this region. The infective processes of traumatic cases seem to be almost exclusively of buccal origin.

The surgical problems met with in serious wounds involving the lower jaw may be arranged in three groups:

1. Complications following soon after the wound. Hæmorrhage from the soft tissues of the floor of the mouth or tongue may be persistent or recurrent and is difficult to control. Acute sepsis, running an acute course of about a week, with a tendency to produce sloughing and to spread as a deep cellulitis, occurs. Secondary hæmorrhage is peculiarly liable to appear from the seventh to the tenth day, due to sloughing.

2. Complications during healing; i.e., chronic suppuration, recurrent abscesses, and necrosis of the jaw. These complications are apt to prolong the convalescence indefinitely.

3. Difficulties of plastic reconstruction of the jaw. Relapses of sepsis after bone grafting may be due to the impossibility of exposing the bone on either side of the gap without opening the buccal cavity, or to implantation of the graft in the septic scar which has resulted from prolonged suppuration.

When there has been a large loss of bone substance, as is very common, no amount of fixation can lead to reconstruction of the bone, and it is toward the latter purpose that all treatment must be directed. If, by fixation, displacement of the fragments can be prevented until reconstruction can be undertaken, so much the better, but the reconstruction must be regarded as the essential purpose.

For considerations of treatment, cases may be divided into three classes:

1. Fractures without considerable loss of substance, actual or probable.

2. Fractures with considerable loss of substance, either actual from immediate destruction or probable from necrosis, but with the superficial soft parts more or less intact.

3. Fractures with considerable destruction of bone and overlying soft parts, as when the bone and lower part of the face are blown away.

The first class lends itself to treatment by intrabuccal fixation and may be expected to give results almost as good as those of the ordinary fractured jaw of civil practice. The treatment of the third class is not discussed here. The second class is an especially common and troublesome one.

It is in this second class of cases that inaccessibility of the soft parts is extreme, and the ordinary methods of control of hæmorrhage here are helpless. Free access to the whole wound by uncompromising division of the overlying soft parts in order to allow of such excision of the wound surfaces as seems necessary and subsequent suture is the first suggestion which a consideration of the general surgical principles provides.

If it had been established by X-ray that considerable destruction of bone had occurred and possibly that further loss by necrosis was probable, it would be clear that no attempt to secure union by ordinary methods was possible, and that everything must be done to favor the success of the necessary plastic operation.

A preliminary puncture laryngotomy should be done and the pharynx plugged, or an intratracheal anæsthetic given. The fracture should be exposed, loose fragments of bone removed, the wound in the soft parts excised, the ends of bone freshened by saw cut, and the alveolar border cut back to an angle. The cheek, floor of the mouth and side of the tongue should then be brought together with mattress sutures to obliterate any cavity between the ends of the bone. A large opening should be left below the jaw for drainage. Intrabuccal fixation should then be used if possible, and the necessary plastic operation should be possible within a few weeks.

Plastic operations on the mandible are especially difficult because of irregular scars in which it is difficult to bury a graft without opening the buccal cavity. It seems a reasonable precaution to make an effort to maintain the vitality of the bone graft implanted in the jaw; this can be done by using pedunculated grafts, i.e., excising a piece of bone to which muscle is attached and using the muscle as a pedicle. The sternomastoid to be attached to the skull, the trapezius and levator anguli to the scapula or clavicle, but especially the sternomastoid to the inner end of the clavicle lend themselves to detachment and displacement into the gap in the jaw, the bone grafts being maintained in position by screws or plate.

V. C. HUNT.

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SURGERY OF THE EYE AND EAR

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SURGERY OF THE NOSE, THROAT, AND MOUTH

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